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[No. 33].

JOURNAL

OF THE

STRAITS BRANCH

OF THE

Royal Asiatic Society.

JANUARY 1900.

Agents of the Society.

London and America	TRUBNER & Co.
Paris	ERNEST LEROUX & Co.
Germany	OTTO HARRASSOWITZ, Leipzig.

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THE
STRAITS BRANCH
OF THE
ROYAL ASIATIC SOCIETY.

COUNCIL FOR 1900.

The Right Revd. Bishop G. F. Hose—*President.*

The Hon'ble W. R. Collyer—*Vice-President for Singapore.*

The Hon'ble Dr. Brown—*Vice-President for Penang.*

H. N. Ridley, Esq.—*Honorary Secretary.*

Dr. Hanitsch—*Honorary Treasurer.*

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The Hon'ble W. J. Napier,
R. N. Bland, Esq.
R. W. Hullett, Esq.
The Rev. W. G. Shellabear.
} *Councillors.*

LIST OF MEMBERS

FOR

1900.

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Bampfylde, C. A.	Kuching, Sarawak.
Banks, J. E.	Singapore.
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Berrington, A. T. D.	Taiping, Perak.
Bicknell, W. A.	Audit Department, Penang.
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Dew, A. T.	Krian, Perak.

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Driver, James	Kuala Lumpor.
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Gentle, Alex.	Singapore.
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Knight, Arthur	Singapore.
Kynnersley, The Hon. C.W.S.	Singapore.
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Lemon, A. H.	Penang.
Lewis, J. E. H., B. A.	Government Printing Office. Sarawak.
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Owen, J. F.	Port Dickson,
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Pears, Francis	Muar.
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Roberts, B. G.	Negri Sembilan.
Rodger, J. P.	Kuala Lumpor, Selangor.
Rostados, E.	Johore.
Rowland, W. R.	Negri Sembilan.
Sarawak, H. H. The Raja of, G.C.M.G. (Honorary Member.)	Kuching, Sarawak.
Sarawak, H. H. The R. S. C. of,	Sarawak.
Satow, Sir E. M., K.C.M.G. (Honorary Member.)	Tokyo, Japan.
Saunders, C. J.	Singapore.
Seah Liang Seah.	Chop "Chin Hin," Singapore.
Seah Song Seah	Chop "Chin Hin," Singapore.
Shelford, R.,	Sarawak.

Shelford, W. H.	Singapore.
Shellabear, Rev. W. G,	Singapore.
Skeat, W. W.	Selangor.
Skinner, A. M., C.M.G.	Canterbury, England.
Smith, Sir Cecil C., G.C.M.G. (Honorary Member.)	England.
Sohst, S. C.	Singapore.
St. Clair, W. G.	Singapore.
Stringer, Charles	Singapore.
Sugars, J. C.	Telok Anson, Perak,
Swettenham, The Hon'ble Sir J. A., C.M.G.	Singapore.
Thomas, O. V.	Penang.
Tollemache, R. C.	
Van Benningen von Helsdingen, Dr. R.	Deli.
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Walker, Lt.Col. R. S. F., C.M.G.	Perak.
Watkins, A. J. M.	Selangor.
Wellford, Dr. T.	Selangor.
Wise, D. H.	Singapore.
Wood, J. B.	Ulu Pahang.
Wood, E. G.	Taipeng.
Wray, L., Jr.	Taipeng, Perak.

Members are requested to inform the Secretary of any change of address or decease of members, in order that the list may be as complete as possible.

All communications concerning the publications of the Society should be addressed to the Secretary: all subscriptions to the Treasurer.

Members may have, on application, forms authorising their Bankers or Agents to pay their subscriptions to the Society regularly each year.

PROCEEDINGS

OF THE

ANNUAL GENERAL MEETING

OF THE

STRAITS BRANCH

ROYAL ASIATIC SOCIETY,

HELD AT THE

RAFFLES MUSEUM, SINGAPORE,

ON

29th JANUARY, 1900.

PRESENT:

Right Reverend BISHOP HOSE, Hon'ble W. R. COLLYER, Hon'ble C. W. KYNNERSLEY, Messrs. A. KNIGHT, R. N. BLAND, R. W. HULLETT, A. GENTLE, Dr. LEASK, Dr. HANITSCH, Rev. W. SHELLABEAR, Rev. J. E. BANKS, and H. N. RIDLEY.

The Minutes of the last Annual General Meeting were read and confirmed.

The Annual Report of the Council and the statement of accounts were read and on the proposal of the Hon'ble W. R. Collyer, seconded by Mr. Hullett, were passed.

The elections of Members during the year were confirmed by the meeting on the proposal of Mr. Hullett, seconded by Dr. Leask.

The officers and council for the present year were then elected, viz:

President.—Right Reverend BISHOP HOSE.

Vice President (*Singapore*) Hon'ble W. R. COLLYER.
„ (*Penang*) DR. BROWN.

Honorary Secretary, H. N. RIDLEY.
„ *Treasurer*, DR. HANITSCH.

Councillors, Hon'ble C. W. KYNNERSLEY, Mr. R. N. BLAND, Rev. W. G. SHELLABEAR, MR. R. W. HULLETT, and H. H. ESCHKE.

ANNUAL REPORT OF THE COUNCIL

OF THE

Straits Branch of the Royal Asiatic Society,

FOR THE YEAR 1899.

:o:

In presenting this Report, the Council are pleased to state that the affairs of the Society are financially more satisfactory than ever.

Since the last General Meeting the following new Members were elected, subject to the confirmation of the General Meeting.

Rev. J. A. B. Cook.
Mr. J. C. Sugars.
Mr. R. C. Edmonds.
Mr. Francis Pears.
Rev. F. W. Haines.
Dr. A. B. Barker.

The Council regret to have to record the loss by death of Sir Charles Bullen Mitchell, Patron of the Society, Dr. de Vicq, (Councillor) and Mr. Koe.

The new map was received at the commencement of the year and was in much demand, one hundred and forty copies being sold in Singapore, and one hundred and twenty nine in England. Copies were presented to the Sultan of Johore, and to Prince Devawongse, who had materially assisted in its publication. One Journal, (No. 32) was published during the year, and another in the course of printing will be shortly in the hands of the Members.

A large number of books, pamphlets and journals were presented to the Society or received in exchange from kindred Institutions.

Honorary Treasurer's Cash Account, for the year ending 31st December, 1899.

Dr.		$	*c.*		*Cr.*	$	*c.*
1899	To Balance in Chartered Bank	1337	50	1899	By American Mission Press for printing of Journal No. 32	452	90
	,, Do. Mercantile Bank	249	76		,, Ed. Stanford for printing new maps	1010	53
	,, Subscriptions for 1896	10	00		,, Bookbinder (mounting of maps, $237.30; binding of books, $217.577 ...	454	87
	,, do. ,, 1897	10	00		,, Advertisements ...	17	58
	,, do. ,, 1898	55	00		,, Furniture	10	00
	,, do. ,, 1899	365	00		,, Commission to collector	10	00
	,, do. ,, 1900	20	00		,, Clerk's Salary	60	00
	,, Life Members	100	00		,, Petties and Postage ...	48	22
	,, Sale of Journals	157	59		,, Fixed Deposit (Mercantile Bank)	1000	00
	,, Sale of Maps	1568	67		,, Balance in Chartered Bank	309	01
	,, Interest on Cash Balance, Mercantile Bank	14	47		,, do. Mercantile Bank	514	88
		$3887	99			$3887	99

Audited and found correct.
R. N. BLAND.

R. HANITSCH,
Honorary Treasurer, Straits Branch, Royal Asiatic Society

A Trip to Mt. Penrissen, Sarawak.

At midday on the 5th of May of this present year of grace, Mr. E. A. W. Cox, of the Sarawak Government service, and myself left Kuching for the upper waters of the Sarawak river on a long talked-of collecting expedition. Our ultimate destination was Penrissen, a mountain of 4,800 feet high, five miles from the "ulu" of the left hand branch of the Sarawak river, and about fifty miles as the crow flies from the sea-coast. The mountain had previously been scaled, in part at least, by Signor Beccari, Mr. A. H. Everett, Dr. G. D. Haviland and Mr. Henderson, but had never, from a zoological point of view, been thoroughly collected over, so that our hopes of obtaining interesting and valuable results ran high.

Our staff consisted of five Dyak collectors, Malay and Chinese boys, and a Chinese cook; to convey these, ourselves and our somewhat bulky baggage, three boats were requisitioned, but as events turned out proved insufficient; however the start was fair and through the lower reaches of the river all went well and comfortably. The night was spent in part at the little village of Selobang, but to catch the tide and to avoid the din of a neighbouring Chinese "wayang," we re-embarked at 12 p.m. and proceeded quietly on our way till at 6.30 in the morning the first "karungan" or gravel bed was encountered; here we stopped for breakfast and a delightful bathe in the now somewhat rapid river. At 9 we were on again, and soon began to experience some difficulty in progression. The river abounded with shallows and small rapids; up and over these our heavy and heavily-laden boats, which to use a Malay expression "ate much water," were poled and hauled only with the greatest difficulty and exertion. At the very bad places a general halt had always to be called, whilst the respective crews joined forces and hauled with ropes one boat up at a time. Late in the afternoon we finally won to Segu, and right glad were we to partake of the hospitality offered to us by the gentlemen then in charge of the Government coffee-estate at that place. Profiting by our experience we exchanged next day one of our heavy boats with its Malay crew for two lighter boats with crews of Land-Dyaks; these men are experts in the art of poling up against a strong and shallow stream and the women are not far behind the men. It was amusing to hear our new recruits coaching our Malay crews, the latter though secretly acknowledging the superiority of their advisers as polers were too proud to take advice in any form from those they considered in every other respect beneath their notice. With such valuable additions to our forces we proceeded up stream at a fair pace; the scenery was lovely, precipitous walls of limestone carved by the weather into every imaginable shape, rose high on either side. Their summits were clothed with a dense growth of trees and creepers, which in places almost roofed in the narrow channel up which we moved; the river itself here rippling over shallows or dashing through rocky gateways, there running calm and still under an overhanging cliff, ever added fresh beauty and interest to the scene. At night we tied up opposite the village of Burgor, and slept in the boats; an early start was made next morning and by midday, we arrived at Pankalan Ampat, thus completing the first stage of our journey. From here we dispatched messengers to the neighbouring village of Sennah, and in the evening had a visit from the Pengara and his youthful son. Thanks to a formidable looking "surat" from the Resident of Sarawak, we met with little difficulty in arranging the important matter of carriers, and were able next day to dispatch the heavy baggage to Sennah, following leisurely ourselves by river, preferring this to the dangers of a Land Dyak road with its picturesque though fragile bamboo bridges slung over nasty-looking places where a fall meant a broken bone or two.

On arrival at Sennah we were met with a cordial welcome by the Orang Kaya and conducted to the chief house of the village. This, as is usual amongst the Land Dyaks, consisted of four or five big houses all built up on tall piles at the summit of the most precipitous part of the river bank. The approach to the village consisted of notched logs, with or without a frail hand-rail of bamboo; communication between one house and another is established by logs rounded or slightly flattened, generally as slippery as glass; in fact within the village itself no one ever walks on the ground. Beneath the houses pigs root and grunt, fowls cackle and boys fight, in a sodden mass of filth, the effluvium from which percolates freely through the open spaces between the floors of bamboo laths. The particular house in which we temporarily took up our abode was a well-built plank structure with billian attap roof, two large doors led out on to a spacious verandah at the back, which again gave on to a large open space surrounded by fowl-houses and sheds, and with ways leading off to other houses. Here and in the verandah much of the daily work is gone through, the house itself being reserved for cooking, eating and sleeping. In the verandah were a couple of large bell-shaped wooden vessels, half-filled with padi, and nearly all day long women were husking this by repeated thumpings blows administered by 3 or 4 foot poles; when husked, the padi is thrown into circular sieves of *rotan*, and shaken till the husks and broken grain are separated off. The Land Dyak man presents in his dress no particular feature of interest, a blue or red cloth "chawat," or a pair of Chinese trousers and a head handkerchief generally completing his garb. The women however are more picturesque: their sole garment is a short petticoat reaching to the knees, generally of blue cloth with a red border, but their arms from elbow to wrist and their legs from just below the knee to the ankle are encircled by rows of brass rings; a shell armlet and leglet generally topping each series of rings; even the little girls are burdened with these ornaments, though otherwise innocent of clothing, and when a number of girls of different ages are seen together it is quite possible to trace a gradual distortion of the calf of the leg due to the weight of metal borne; generally also several rings of *rotan* dyed red or black are worn round the waist, and out-of-doors a neat close-fitting cap made of palm leaf. There were few objects of ethnographical interest to be noticed in the house. Unlike the Sea Dyak, these people neither weave their cloth, forge their weapons nor make their pottery, but buy such necessaries from Malay and Chinese traders. However, I saw, coveted and subsequently purchased a curious hat known as "Bok tumbis;" this was cylindrical, narrower at the top than at the bottom, 9 inches in height, made of coloured beads strung in striking patterns on five threads of *rotan*, the whole strengthened with uprights of thicker *rotan*. The top was open, and through the aperture the wearer—always a woman—pulls her hair, allowing it to stream out on all sides, it is only worn in dances during the annual harvest feast; the men on such occasions sometimes wear a necklet of tiger-cat's teeth alternated with the teeth of bats, squirrels and such like small deer. Besides elegantly-carved wooden handles for their *parangs*, baskets woven from *rotan*, without any distinctive pattern, and small oval wooden boxes for powder and shot, I could discover no other article which these people make.

That evening we held a great "bichara," and after over-riding the almost countless objections to carry our baggage raised by one man after another, we endeavoured to get information concerning the summit of the mountain, its conformation, the water-supply, the animals and birds, and such like matters: many yarns were spun to us, and we received a large amount of information which subsequently proved to be mainly erroneous. Though Penrissen is the hunting ground of these Sennahs, but few had ascended to any considerable altitude, so they compensated for their lack of the knowledge we wanted by unlimited romancing. Though we rose early next morning, it was nine o'clock before we could make a start on our march to the mountain; our thirty to forty coolies wanted to take only the lightest loads, whilst we naturally wanted them to take those things which we needed most, leaving the rest to follow with further detachments of coolies from outlying villages, and the apportioning of weights was a long task. At length we made a move, and after wading across the river began our tramp. The way lay through old deserted padi farms overgrown with a dense but scrubby jungle; the country was undulating in the extreme, and the path the merest track, a foot or less in breadth, at frequent intervals interrupted by bamboo bridges and batangs, for the most part rotten. As the heat was intense we found walking very trying and difficult, and were glad at twelve o'clock to rest and discuss a meal. At one o'clock we were on again, and soon reached the lower slopes of the mountain, and as these up to a height of 2,000 feet are clothed with bamboo jungle, we found the going much more easy. After crossing several mountain torrents, we reached late in the afternoon, at an altitude of 2,500 feet, a huge overhanging boulder of sandstone conglomerate, known to the Sennahs as Batu Tinong, and under this we pitched our our camp for the night. A dashing mountain stream was quite close by, and the delight of sitting under a foaming cascade of really cold water after our exhausting day was one not readily to be forgotten. Leeches had proved persistent and troublesome throughout the day, but in my opinion the annoyance caused by them has always been somewhat exaggerated.

Next morning we continued our climb until we had reached an altitude of 3,400 feet, when our guides called a final halt: the position was not particularly inviting, being a very small flat area totally shut in by tall jungle, whilst both to the front and rear the sides of the mountain sloped steeply downwards and upwards; however, as we were informed that there was no water to be had at any greater height, and further that all the Europeans who had previously visited the mountain had encamped here, we had perforce to acquiesce in our guides' decision. Our carriers made a clearing and proceeded to build us a hut; this took two or three hours to complete, as we insisted it should be commodious, solid and watertight; the poles and beams were of course felled in the jungle, and the floor, raised about two feet off the ground, was made with laths and saplings, whilst intertwisted palm-leaves served for roof and walls. Every felled tree produced a small harvest of insects; a few interesting butterflies invaded the clearing, amongst them *Cyrestis seminigra*, previously only recorded from Kina Balu, whilst in the undergrowth were found snails, scorpions and centipedes, all delightfully unfamiliar to the low-country naturalist. In securing these specimens and in rigging up shelves and sleeping-bunks in our hut, making all comfortable and snug, we spent the rest of the day.

On the following day (May 13th) Mr. Cox early started out to explore the mountain at a higher elevation, and at midday returned with the report that after a stiff climb of 400 feet he had reached a magnificent plateau of considerable extent, where water was abundant and a good view readily obtainable, altogether infinitely superior to our present situation; our chagrin at having been deceived by our guides was great, but we decided to wait till the shooters returned from the jungle round about, whither they had early that morning been sent, before deciding whether it was worth while or not staying on in our present position. When eventually the hunters returned, the results of their labours were not very interesting, except the insects: of birds, a small robin-like species, dull in colour (*Alcippe cinerea*) was the only one at all characteristic of a mountain ornis. Mr. Cox therefore decided to visit next day the actual summit of the mountain, and if much of interest was seen or procured, to stay there for 10 days or a week. In accordance with this idea he and all the collectors, except one, whose services I retained, departed on the 14th. At mid-day I received word that they had reached the actual summit. Up to 4,500 feet the climbing had not been particularly difficult, but the last 300 feet was a sheer precipice of sand-stone conglomerate with a few narrow ledges at infrequent intervals, and to scale this, ladders had to be improvised: the summit was found to be quite flat, about half a mile long by two hundred yards broad, a dreary wilderness of pandanus and *rotan*, with hundreds of huge trees in every stage of life, from full and vigorous growth to absolute decay. Animal life was very scarce, and as a strong wind was blowing, bringing up a dense fog, Mr. Cox decided to descend to the foot of the cliff and encamp there. By the bearers of his message he sent down a specimen of the trogon, *Harpectes duliteusis*, and a gigantic earthworm nearly eighteen inches long.

During the next five days I collected assidously round about our hut and on the plateau already alluded to, dismissed our first batch of coolies and awaited the arrival of the rest of our baggage. This came up by degrees, until finally all our belongings could be bestowed in our hut and kitchen.

On the 18th, Mr. Cox sent down to say that he had moved lower down the mountain on to a peak known as Mt. Prang, altitude 3,900 feet, and as some most curious insect larvæ (*Vermileo sp.*) accompanied his letter, I determined to join him and investigate the life-history of the insect as fully as possible. At this station the hunters had erected a long lean-to on the side of the hill, and from it we had a most magnificent view of the country below us right down to the sea, fifty miles away. Unfortunately at this altitude our view was too frequently interrupted by fog and cloud, which generally swept up towards the middle of the day, and obscured everything till nightfall. From this station we made various expeditions round and about. Birds and mammals were extremely scarce, and the insects did not differ very markedly from those to be caught on the plateau; as, moreover, I had obtained alive several specimens of the fly-larva, *Vermileo sp* (?)* we decided to return to our original and comfortable quarters.

We descended on the 24th, and from then till the 30th lived a calm and uneventful life; our mornings from an early hour to nearly noon were spent in tramping through the jungle, hunting for birds, reptiles, insects, in fact, everything that had life in it; the afternoons in skinning, pinning out insects, bottling and labelling spirit specimens, and the other thousand and one duties which make a collector's life a busy one. An early dinner with bed to follow completed the day.

The return journey to Sennah was much like the first, save that it was accomplished in one day, one little incident only perhaps is worthy of note:—as we neared the foot of the mountain our carriers suddenly espied a small tree, which to our eyes presented no particular features of interest; however, loads were thrown aside in a hurry and a rush made for the tree, which was quickly hacked down and split up, and from numberless burrows in the wood, hundreds of a peculiarly scented, pinkish larva were extracted. No adults or pupæ were to be found, so beyond recognising the larva as that of a beetle, I was unable to determine the species or even family; these larvæ when boiled are considered a great delicacy by the natives of the district. They certainly looked much more appetising than the fat white grubs of the big coconut beetle which these people also devour with great gusto.

From Sennah we proceeded straight on to Pankalan Ampat, and after waiting a few days for boats and to collect revenue we returned to Kuching, arriving on June 4th.

---

* See this Journal for description of the habits of this curious larva.

Taken as a whole, the expedition was a great success, but the very great scarcity of mammals and birds was disappointing; only two kinds of monkey were seen. The cry of a solitary Wa-Wa was heard, but occasionally; pigs, deer, *kijang* and *pelandok* were noticeable only by their absence, and not a single game bird was procured or even seen. This scarcity I attribute to the fact that 60 per cent of the Dyaks of a by no means thinly populated district are armed with guns, which they constantly use, huge foraging parties going out before every harvest feast and keeping up for days a constant fusillade on anything above the size of a thrush; further I am inclined to suspect that this the Southern end of Sarawak in less faunistically rich than the more Northern regions. Certainly the list of birds which we obtained on Penrissen must compare somewhat unfavourably with those published by the late Mr. John Whitehead and by Mr. Charles Hose of Baram, two gentlemen whose labours on Mts. Kina Balu and Dulit are so well known in the zoological world.

Reptiles and amphibia were moderately abundant, and three species of fish were captured in a mountain stream by the use of *Tuba*. The invertebrate fauna was extremely rich, and much attention was paid to forming large collections of insects, and arthropods in general, and I am confident that, entomologically at least, no mountain in Borneo has been so well worked at as was Penrissen during our stay there.

Very little time was at our disposal to collect satisfactorily the flora of the mountain; the small collections made, however, have proved to be of such interest (see Appendix to the article) that I have determined to send back my collectors to the mountain in October, almost entirely to botanise.

Lists of the animals obtained will appear from time to time in this Journal in the order in which they are worked out. At present I am indebted to Mr. Ridley for working out the plants (Phanerogams only) obtained, and to His Lordship the Bishop of Singapore and Sarawak for the appended list of, and remarks on, the ferns.

R. Shelford,

APPENDIX I.

List of the Mammals of Penrissen.

1. *Hylobates leuciscus* Schreb. No specimen of this was captured.

2. *Semnopithecus rubicundus* Müll. Extremely common, not differing in any way from low-country specimens.

3. *Macacus cynomolgus* L. Two specimens were shot near the summit of the mountain, and were remarkable for the great length of the hair round the face.

4. *Hipposiderus* sp. (?) This is perhaps a new species, a matter to be decided by Mr. Oldfield Thomas, of the British Museum.

5. *Tupaia* sp. (?) Closely mimicked by *Sciurus everetti*. The species may possibly be *T. mülleri*, described lately by Kohlbrugge.

6. *Tupaia minor* Gthr.

7. *Ursus malayanus* Raffles. A large specimen of this bear was encountered as we were on our way down the mountain and, as guns were not handy, the animal made good his escape before a shot could be fired.

8. *Paradoxurus hermaphrodyta* Schreb. This and the following two species are about the only mammals which the Land Dyaks do not eat.

9. *Arctictes binturong* Raffles. Native name "tûn."

10. *Herpestes brachyurus* Gray.

11. *Sciurus* (*Ratufa*) *bicolor ephippium* Müll. Somewhat to my surprise this squirrel was exactly the same as the variety obtained round Kuching. It is a species which varies

most markedly in different localities, mountain forms being as a rule much darker and redder.

12. *Sciurus hippurus* Geoff.

13. *Sciurus tenuis* Horsf.

14. *Sciurus* (*Funambulus*) *everetti* Thos.

15. *Nannosciurus melanotis* Müll. and Schleg.

16. *Mus margarettæ* Thos. This pretty little mouse was seen about the house one evening, but it eluded all efforts to catch it.

17. *Sus barbatus* Müll.

18. *Cervus equinus* Cuv.

The Birds of Mount Penrissen and Neighbouring District.

The bird fauna of Mount Penrissen as evinced by collections made in the month of May of this year (1899) has proved to be most disappointingly sparse, and this list must compare somewhat unfavourably with those of the late Mr. Whitehead's collections on Mt. Kina Balu and of Mr. C. Hose's collections on Mt. Dulit. Not only was the number of species obtained small, but bird-life in general, with the exception of Barbets, was most noticeably scarce. I attribute this scarcity partly to the fact that the mountain has long been the happy hunting-ground of the Land Dyaks, 60 % of whom are armed with guns; all the game birds seem to have been shot or trapped, for we certainly neither saw nor heard one, whilst hornbills, profiting by a large experience of the sound of a shot, were very difficult to approach. A good collection of low-country birds was made at Pankalan Ampat, at the head of the left-hand branch of the Sarawak river, and about 10 miles from the foot of Penrissen. Amongst other good things we were fortunate enough to obtain there, was a specimen of a kingfisher, rare in Borneo, *Alcedo euryzone*.

With the exception of a small fly-catcher, too battered for description, and an obscure little greenish Timeling, allied to

Mixornis, all the species obtained are well known, thanks chiefly to the labours of Mr. Hose on Mt. Dulit. As each of the above-mentioned specimens are unique, and as my knowledge of systematic ornithology is somewhat inadequate, I refrain from describing them, until further material can be obtained. I have followed the classification adopted by Mr. Everett in his list of Bornean birds (cf. this Journal No. 20, 1889,) and I have included those species obtained by Mr. Everett in a former expedition to Penrissen.

FAMILY TURDIDÆ.

1. *Myiophoneus borneensis* Sclater, Ibis 1885, p. 123. One young specimen of this species was obtained, differing so markedly from the adult, that I was inclined to regard it as a new species; a subsequent careful comparison with a skin of a typical female from Mt. Dulit revealed its identity. The back wings and tail are of a very dark brown, and the feathers of the breast and head have the shafts and tips white, the webs of these feathers are not so well developed as in the adult, and there is no trace of any blue coloration on the wings. Feet purple. 4,100 feet.

2. *Copsychus saularis* L. Sharpe, Cat. B. vii. p. 65. Common everywhere in the low-country.

3. *Cittocincla suavis* Sclater. Sharpe. Cat. B. vii. p. 87. From Paukalan Ampat.

4. *Pomatorhinus borneensis* Cat. Sharpe. Cat. B. vii. p. 411. Low-country and up to 3,000 feet.

5. *Stachyris leucotis* Sharpe. Ibis 1878, p. 418. Penrissen 3,000 feet.

6. *Stachyris borneensis* Sharpe. Ibis 1887, p. 449. A common species on Penrissen. A nest with three eggs was found, the eggs are white (as is usual in this genus) and measure 21 by 16 mm: the nest is a loose ill-made structure.

7. *Malacopterum albigulare* Gray. Sharpe, Cat. B. vii. p. 568.

This species is eminently characteristic of the western end of Sarawak. Pankalan Ampat.

8. *Alcippe cinerea* Blyth. Sharpe, Cat. B. vii. p. 622. The commonest species on the mountain: the note is like that of a robin.

9. *Staphidia everetti* Sharpe. Ibis 1887. p. 447. Pankalan Ampat. The nest is neatly woven from vegetable fibres: the eggs are white with small brown spots, more thickly placed at the upper end.

10. *Turdinus sepiarius* Horsf. Sharpe, Cat. B. vii. p. 544. Penrissen from 2000 feet upwards. We did not find the typical mountain form *T. canicapillus* Sharpe recorded from Dulit and Kina Balu.

11. *Trichostoma rostratum* Blyth. Sharpe, Cat. B. vii. p. 562. Pankalan Ampat. Not at all common.

12. *Drymocataphus capistratoides* Temm. Sharpe, Cat. B. vii. p. 555. Pankalan Ampat.

13. *Kenopia striata* Blyth. Sharpe, Cat. B. vii. p. 573. Lower slopes of Penrissen.

14. *Turdinulus exsul*. Sharpe, Ibis 1888, p. 479. Penrissen (A. H. Everett).

FAM. BRACHYPODIDÆ.

15. *Hemixus malaccensis* Blyth. Sharpe, Cat. B. vi. p. 52. Found all over the mountain.

16. *Hemixus connectens* Sharpe. Ibis 1887, p. 446. This was one of the commonest species of this family on the mountain. The Dyak name "empulu" is applied to all birds of this species.

17. *Pinarocichla euptilosa*. Sharpe, Cat. B. vi. p. 62. Pankalan Ampat and Penrissen.

18. *Criniger diardi* Temm. Sharpe, Cat. B. vi. p. 76. A characteristically low-country form, common everywhere.

19. *Criniger ruficrissus* Sharpe. Id. Cat. B. vi. p. 81. Another common mountain "empulu."

20. *Criniger gutturalis* Bp. Sharpe. Cat. B. vi. p. 80. Penrissen and Pankalan Ampat.

21. *Criniger finschi* Salvad. Sharpe, Cat. B. vi. p. 84. Pankalan Ampat. This is generally found on mountains, and it was with some surprise that I obtained it at so low an altitude.

22. *Tricholestes criniger* Blyth. Sharpe, Cat. B. vi. p. 80. Pankalan Ampat.

23. *Trachycomus ochrocephalus* Gm. Sharpe, Cat. B. vi. p. 93. Pankalan Ampat.

24. *Pycnonotus simplex* Less. Sharpe, Cat. B. vi. p. 153. Pankalan Ampat.

25. *Rubigula webberi* Hume. Sharpe, Cat. B. vi. p. 171. Pankalan Ampat. We did not meet with this pretty little bird on Penrissen, where Mr. Everett formerly obtained it.

26, *Ægithina viridissima* Sharpe. Cat. B, vi. p. 6. A very common low-country bird along the banks of rivers in their upper waters. One specimen was shot on Penrissen at an altitude of 3,000 feet. *Actiphia viridis* Bp. is common round Kuching and near the coast.

27. *Chloropsis zosterops* Vig. Sharpe, Cat. B. vi. p. 24. Pankalan Ampat.

28. *Chloropsis cyanopogon* Temm. Sharpe, Cat. B. vi p. 32. Pankalan Ampat.

29. *Chloropsis viridinucha* Sharpe. Id. Cat. B. vi. p. 31. pl. Pankalan Ampat.

FAM. ORIOLIDÆ.

30. *Oriolus xanthonotus* Horsf. Sharpe, Cat. B. iii. p. 213. Penrissen. The only species of Oriole to be found on the

mountain, a most disappointing fact as I had great expectations of obtaining some typically mountain form.

31. *Dissemurus paradiseus* L. Sharpe, Cat. B. iii. p. 258. Ranges up to 3000 feet.

FAM. MUSCICAPIDÆ.

32. *Erythromyias mulleri* Blyth. Sharpe, Cat. B. iv. p. 200 pl. iv. f. 2. Penrissen (A. H. Everett).

33. *Erythromyias sp. n (?)*

One badly shot specimen of a little fly-catcher belonging to this genus was obtained: it was quite impossible to sex the bird and it would be unwise to describe it until further material is obtained. The plumage of the upper parts and wings are as in *E. mulleri*, but the breast is ashy and the lower halves of the outer tail-feathers are white. Penrissen 4,100 feet.

34. *Rhipidura perlata* S. Mull. Sharp, Cat. B. iv. p. 328. Common up to 3000 feet.

35. *Tersiphone affinis* Blyth. Sharp, Cat. B. iv. p. 349. Low country and up to 3000 feet. Known as the "rain-bird" by the natives.

36. *Philentoma velatum* Temm. Sharpe, Cat. B. iv. p. 365. Ranges up to 4000 feet. The young male resembles the adult females very closely, but the plumage on the abdomen and rump is generally admixed with earthy brown.

37. *Philentoma pyrrhopterum* Temm. Sharpe, Cat. B. iv. p. 366. Occurs side by side with the preceding species; both are easily called up to the gun. Mr. E. Bartlett former curator of the Sarawak Museum described in this Journal (April 1894) a new species of *Philentoma*, *P. maxuelli*. I have examined the solitary specimen in the Museum collection and have very grave doubts of its distinctness from *P. pyrrhopterum*; a quite asymmetrical patch of chestnut on the breast is the only distinguishing feature, and prefer to regard the bird merely as a some-

what abnormal variation, until further material is obtained; but as seven years have elapsed since the specimen was shot and more or less continuous collecting in the same area has not brought to light a similar one, though both *pyrrhopterum* and *velatum* are common enough, I hold no very strong hopes of matching the specimen with another.

38. *Culicicapa ceylonensis* Swains. Sharpe, Cat. B. iv. p. 369. Penrissen and surrounding low-country.

39. *Siphia beccariana* Salvad. Sharpe, Cat. B. iv. p. 452. Penrissen 4,000 feet.

40. *Siphia (?) everetti* Sharpe, Ibis. 1890, p. 366. Penrissen 4000 feet.
    I am not at all certain that I have identified this species correctly; its nearest ally seems to be *Stoparola panayensis* Sharpe from the Philippines, judging from a description of that species, the distinction between the genera *Stoparola* and *Siphia* is a very small one, merely a question of the proportion of culmen-length to breadth at the gape.

FAM. NECTARINIIDÆ.

41. *Æthopyga temmincki* S. Müll. Gadow, Cat. B. ix. p. 16. Not uncommon on Penrissen above 3500 feet.

42. *Anthothreptes simplex* S. Mull. Gadow, Cat. B. ix. p. 114. Penrissen.

43. *Anthothreptes malaccensis* Scop. Gadow, Cat B. ix. p. 122. Pankalan Ampat. This species was not found on the mountain.

44. *Arachnothera flavigaster* Eyton. Gadow, Cat. B. ix. p. 109. Penrissen up to 4000 feet.

45. *Arachnothera longirostris* Lath. Gadow, Cat. B. ix. p. 103. Penrissen and Pankalan Ampat.
    The nest composed of leaves is fastened to the under side of a leaf, two or three eggs are laid, often showing a

considerable amount of variation in their colouring; the most typical form is white with a suffused brown band circling the egg about its middle.

FAM. DICÆIDÆ.

46. *Prionochilus xanthopygius* Salvad, Sharpe, Cat. B. x. p. 66. Penrissen 4000 feet.

47. *Prionochilus maculatus* Temm. Pankalan Ampat. Sharpe, Cat. B. x. p. 69. Pankalan.

FAM. MELIPHAGIDÆ.

48. *Zosterops aureiventer* Hume. Gadow, Cat. B. M. vol. ix. p. 163, Penrissen (A. H. Everett).

49. *Zosterops squamifrons* Sharpe, Ibis. 1892, p. 323. Penrissen (A. H. Everett).

FAM. STURNIDÆ.

50. *Calornis chalybea* Horsf. Sharpe, Cat. B. xiii. p. 143. Penrissen and Pankalan Ampat.

FAM. CORVIDÆ.

51. *Corvus macrorhynchus* Wagler. Sharpe, Cat. B. iii. p. 39. The crow was met with at considerable elevations.

52. *Platylophus coronatus* Raffl. Sharpe, Cat. B. iii. p. 318. Penrissen up to 2500 feet.

FAM. PITTIDÆ.

53. *Pitta arcuata* Gould. Scl., Cat. B. xiv. p. 431. Penrissen up to 4000 feet.
This was the only Pitta to be found on the mountain and its melancholy whistle was constantly heard. The nest is the usual loose bundle of leaves and grass characteristic of the members of this family and the eggs are white, spotted with grey and brown in an irregular band above the middle; they measure 30 by 22 mm.

FAM. EURYLÆMIDÆ.

54. *Calyptomena viridis* Raffl. Scl., Cat. B. xiv. p. 456. Pankalan Ampat: the mountain forms *C. Whiteheadi* Sharpe and *C. hosii* Sharpe were not found.

55. *Eurylæmus ochromelas* Raffl. Scl., Cat. B. xiv. p. 465. Common in the low-country.

56. *Cymborhynchus macrorhynchus* Gm. Scl., Cat. B. xiv. p. 468. Pankalan Ampat.

FAM. CYPSELIDÆ.

57. *Collocalia fuciphaga, (?)* Thunb. Hartert, Cat. B. xvi. p. 498. Numerous swifts, probably of this species, were seen just below the summit of the mountain. None were procured, however.

FAM. PICIDÆ.

58. *Sasia abnormis* Temm. Hargitt, Cat. B. xviii. p. 557. Pankalan Ampat. An omen bird of the Dyaks.

59. *Chrysocolaptes validus* Temm. Hargitt, Cat. B. xviii. p. 458. A pair of this handsome woodpecker was shot on Mt. Seruru, a spur of Mt. Penrissen at an altitude of 4,300 feet.

60. *Chrysophlegma malaccense* (Lath.) Hargitt, Cat. B. xviii. p. 126. Penrissen and surrounding low country.

61. *Gauropicoides rafflesii* Vig. Hargitt, Cat. B. xviii. p. 132. A low-country form: the young male differs very markedly from the adult, nearly the whole of the under surface being dusky, the red crest smaller, the top of the head dark, and with a white patch on the side of the throat.

62. *Miglyptes grammithorax* Less. Hargitt, Cat. B. xviii. p. 385. Pankalan Ampat.

63. *Micropternus badiosus* Temm. Hargitt, Cat. B. xviii. p. 400. Pankalan Ampat.

FAMILY ALCEDINIDÆ.

64. *Alcedo euryzone* Temm. Sharp, Cat. B. xvii. p. 154.
Pankalan Ampat, banks of river. We noticed the bird when descending the river from the Dyak village of Sennah to Pankalan Ampat, and about a week later my collectors shot it. Unfortunately by this time I had returned to Kuching, and was consequently unable to sex the bird myself or to make colour notes, and I am afraid that as a result of native carelessness, the present label "female" is untrustworthy. The specimen is a very small one, the total length being only 6.5 in. as against 8 in., the total length of the full-grown adult. It possesses the blue pectoral band spotted with white, characteristic only of the male, and the lower parts are not ferruginous as is usual in females: in many small points this specimen differs slightly from Dr. Sharpe's description (l. c.) but nevertheless I am sure that my identification is correct.

65. *Ceyx (?) euerythra* Sharpe. Sharpe, Cat. B. xvii. p. 179.
The genus Ceyx is in a most confused condition, and I am therefore extremely doubtful about a young specimen of this little Kingfisher which was shot close to the summit of Penrissen. The bill is extremely short; ·8 inch, as against 1.5 of the adult, and is black, paler towards the tip instead of coral red. The wing-coverts and scapulars are red and there is no blue spot behind. The wing coverts as in *C. euerythra*, but there is a black frontal patch as in *C. dillwyni*: further *C. dillwyni* has been found on Dulit, but *C. euerythra* has not; I am therefore completely puzzled as to the correct name for our Penrissen specimen, and must wait until I can see more young specimens of both species before absolutely deciding.

66. *Halcyon concreta* Temm. Sharp, Cat. B. xvii. p. 285. Mt. Penrissen 3000 feet.

FAMILY BUCEROTIDÆ.

67. *Rhinoplax vigil Forst.* Grant, Cat. B. xvii. p. 427.
The note of this bird, well represented by its native name

"Tajak," was frequently heard on the mountain, but we did not secure a specimen.

68. *Rhytidoceros undulatus* Shaw. Grant, Cat. B. xvii. p. 382.
Not common on the mountain.

69. *Anorhinus galeritus* Temm. Grant, Cat. B. xvii. p. 391.
The commonest species; but none of this family were easy to get, owing to their excessive shyness.

70. *Berenicornis comatus* Raffl. Grant, Cat. B. xvii. p. 423.
Penrissen.

FAM. MEROPIDÆ.

71. *Nyctiornis amicta* Temm. Sharpe, Cat. B. xvii. p. 90.
Pankalan Ampat.

FAM. TROGONIDÆ.

72. *Harpactes diardi* Temm. Grant, Cat. B. xvii. p. 482.
Low-country and lower slopes of Penrissen.

73. *Harpactes kasumba* Raffl. Grant, Cat. B. xvii. p. 483.
Occurs with the preceding species.

74. *Harpactes duvaucelii* Temm. Grant, Cat. B. xvii. p. 491.
Pankalan Ampat. All the above are omen birds with the Dyaks.

75. *Harpactes duliteusis* Grant. Cat. B. xvii. p. 502, pl. xvii.
Penrissen from 3,000 feet upwards to the summit. Previously recorded from Kina Balu and Dulit. It is closely allied to *H. oreskios* Temm. from which it differs slightly in coloration.

FAM. PODARGIDÆ.

76. *Batrachostomus affinis* Blyth. Hartert, Cat. B. xvi. p. 638.
Common at Pankalan Ampat, where it was frequently seen hawking insects round the tops of trees at twilight: the flight is peculiar and quite unmistakable.

FAM. CAPITONIDÆ.

77. *Chotorhea chrysopsis* Goffii. Shelley, Cat. B. xix. p. 59. Penrissen above 2,000 feet. The "kayu ara" was in fruit, and this and the two following species of barbets were excessively common, huge flocks sometimes nearly covering the trees bearing their favourite fruit.

78. *Cyanops mystacophanes* Temm. Shelley, Cat. B. xix. p. 72. All over the mountain. This bird exhibits considerable variation in plumage in relation both to sex and age (cf. Salvadori Occ. Bor. Tav. I): a very interesting young female specimen was obtained, almost entirely green, with a few blue feathers on the cheeks and round the gape, and without a trace of the red and yellow plumage of the adult.

79. *Mesobucco eximius* Sharpe, Ibis, 1892, p. 324, 1893, pl. xi. Penrissen above 2,000 feet.

80. *Calorhamphus fuliginosus* Temm. Shelley, Cat. B. xix. p. 51. Lower slopes of Penrissen and the surrounding low-country.

FAM. CUCULIDÆ.

81. *Surniculus lugubris* Horsf. Shelley, Cat. B. xix. p. 227. A low-country species.

82. *Cuculus micropterus* Gould. Shelley, Cat. B. xix. p. 241. Pankalan Ampat. One female in young plumage with the head and neck mottled with fulvous was obtained.

83. *Rhinortha chlorophæa* Raffl. Shelley, Cat. B. xix. p. 393. A common low-country species.

84. *Rhopodytes borneensis* Bp. Shelley, Cat. B. xix. p. 389. Low-country. Native name "Mindu."

85. *Phœnicophoes microrhinus* Berl. Nov. Zool. p. 71. Vol. II. 1895. Low-country. This form has been separated off from *P. erythrognathus* by Berlepsch (l. c.) on account of the difference in the shape of the nasal apertures, perhaps

rather a sub-specific than a specific distinction. The following is a tabular arrangement of Berlepsch's views concerning the genus *Phœnicophœs.* The genera adopted in the Brit. Mus. Cat. being placed in brackets.

P. pyrrhocephalus Forst. Ceylon.

P. (*Urococcyx*) *æneicaudus* (T. & E. Verr.) Mentavei Is.

P. (*Urococcyx*) *erythrognathus* Bp. Malacca and Sumatra.

P. (*Urococcyx*) *microrhinus* Berl. Borneo and Natuna Is.

P. (*Rhinococcyx*) *curvirostris* Shaw. Java.

P. (*Dryococcyx*) *Lawingtoni* Sharpe. Palawan.

P. (*Rhamphococcyx*) *calorhynchus* Tem. Celebes.

86. *Zanclostomus javanicus* Horsf. Shelley, Cat. B. xix. p. 380. Penrissen 3,000-4,000 feet.

FAM. COLUMBIDÆ.

87. *Macropygia ruficeps* Temm. Salvadori, Cat. B. xxi, p. 360. Penrissen 4,000 feet.

88. *Osmotreron olax* Temm. Salvadori, Cat. B. xxi p, 64.

APPENDIX II.

Plants collected at Penrissen.

By H. N. Ridley.

This collection, though a small one, contains a large proportion of novelties, showing that a more complete botanical survey would be well worth making. The plants obtained are of typical Bornean mountain flora facies, and most closely resemble the plants of Kina Balu in North East Borneo.

Sonerila borneensis Cogn. at 3,500 feet; flowers white, stamens yellow.

,, ,, Var (?) A smaller plant nearly glabrous, common.

Begonia borneensis. A. D. C. At 3,000 feet alt.

Argostemma gracile Stapf. Mt. Seruru, a Peak of Penrissen, 4,500 feet. Only previously known from Mt. Kina Balu.

Ophiorrhiza fibrillosa n. sp.

Stem over a foot tall, rather stout, covered with short scattered brown hairs. Leaves lanceolate acute at both ends 12 nerved, 4 inches longer less, 1½ inch wide green and glabrous above glaucous beneath and nerves covered with red hairs, petiole ½ inch long covered with red hairs. Stipules narrow divided into two branches each ending in subulate fibrils, persistent ¼ inch long hairy. Cymes in terminal axils much shorter than the leaves covered with red wool, about an inch long. Flowers shortly petioled white, Calyx pustular teeth short acute. Corolla tube dilate at base ¼ inch long, lobes short oblong obtuse pustular. Stamens oblong obtuse, filaments very short. Style slender, stigma broadly bilobed lobes rounded. Fruit absent. At 4,000 feet, flowers white.

Allied to *O. subfalcifolia* Miq. The stipules are peculiar in being broken up into fibrils, and being persistent, and are crowded together in the terminal buds, giving them a curious tufted appearance.

Rhododendron cuneifolium var. *subspathulatum.*

A much branched twiggy plant, leaves mostly spathulate apices not truncate as in the type; flower tubular, lobes quite rounded. At 4,500 feet. Flowers red waxy. This might perhaps be distinguished as a separate species, but the materials, comprising but a single flower, are hardly adequate. The type was obtained on Kina Balu by Dr. Haviland.

Nepenthes tentaculata Hook fil. The only species seen, on the top of a felled tree, at 4,000 feet altitude. Not rare in North Borneo.

Eria megalopha n. sp.

Rhizome slender $\frac{1}{8}$ inch thick covered with short brown sheaths, roots long and wiry. Stems distant $\frac{1}{2}$ to an inch apart slender slightly thickened above, covered with brown short scattered sheaths, 4 to 5 inches tall less than $\frac{1}{8}$ inch through. Leaves 2, narrow lanceolate acuminate base acute 7 nerved $3\frac{1}{2}$ inch long $\frac{1}{2}$ inch wide. Flower orange from a tuft of papery brown sheaths $\frac{1}{2}$ inch long, above the leaves. Pedicel and ovary very slender $\frac{5}{8}$ inch long. Upper sepal lanceolate $\frac{1}{2}$ inch long, lower ones broader subfalcate. Petals linear lorate, narrower. Lip $\frac{1}{2}$ inch long, base narrow fleshy curved, with a process at base, lateral lobes falcate obtuse broad, terminal one broadly subquadrate margins rounded. Apex broad truncate $\frac{1}{4}$ inch across; two low rounded ridges between the lateral lobes, and a single large thin keel edge denticulate running the whole length of the midlobe and ending in a projecting point, with three short parallel ridges on each side at right angles to central ridge. Column long arched. At 4,000 feet alt. Flower orange. Allied to *E. neglecta* Ridl. but differs in its very slender stems, remote from each other, and remarkable lip with an unusually large central keel.

Calanthe Shelfordi n. sp.

Leaves nine, petiole 3 inches long tapering into the lanceolate acuminate blade 1 foot long, 2 inches across, five nerved, herbaceous plicate. Raceme 8 inches long slender. Flowers numerous flesh color, nearly an inch across. Pedicels slender $\frac{1}{2}$ to $\frac{3}{4}$ inch long. Sepals oblong lanceolate acute, upper one broadest. Petals broadly spathulate acute. Lip 3 lobed much shorter $\frac{1}{4}$ inch long, lateral lobes short rounded, median elongate linear oblong apex dilated rounded then acute; spur $\frac{1}{2}$ inch long pendulous dilated and hooked at apex; calli on lip 2 small wartlike processes. Clinandrium deep edges thin elevated undulate, rostellum long acuminate. At 4,800 feet near summit. Flowers flesh color. Perhaps as near *C. Curculigoides* as any species, but with a more slender raceme and a very different lip.

APPENDIX III.

List of the Ferns of Penrissen.

By Bishop Hose.

1. *Trichomanes maximum* Blume. 4,100 feet, common.
2. *Davallia* (*Humata*) *pedata* Smith. 3,500 feet.
3. *Lindsaya cultrata.* Swartz.
4. ,, *concinna* Smith.
5. ,, *scandens* Hk.
6. *Polypodium* (*Goniopteris*) *firmulum* Baker. Previously recorded from Mt. Dulit only.
7. ,, (*Eupol*) *decorum* Brack. 3,500 feet.
8. *Polypodium hirtellum* Bl. This species is new to Borneo, being previously recorded from Java, Perak, Ceylon, Phillpines and China.
9. *Polypodium obliquatum* Bl. Also new to Borneo.
10. ,, (*Goniophlebium*) (?) sp. nov. This is a very interesting fern. "No other simple form of the sub-genus has been found in this part of the world, so far as I know." (G. F. S. & S.)
11. *Nephrodium* (?) *lineatum* Coleb. None of the fronds fertile. If correctly identified, new to Borneo.
12. *Acrostichum* (*Chrysodium*) sp. (?) near *blumeanum* Hk. No fertile fronds.

LYCOPODIACEÆ.

Selaginella atroviridis Spring var. (?) Differs from the type in having unusually long cusps to the leaves of the upper plane. There is so fruit on it. Common.

S. obesa Bak. Specimens without fruit. Common.

Mosses and Hepatics collected by A. H. Everett and named by F. Brotherus.

MOSSES.

Calymperes cristatum Hampe.

Neckera gracilenta var. *flagellifera* Broth. n. var.

Choetomitrium leptoma Schwager.

C. orthorrhynchum Bry. Jav.

Thuidium Everetti Broth. n. sp.

HEPATICÆ.

Bazzania australis Lindenb.

R. Shelford.

The Flora of Singapore.

By H. N. Ridley.

Introduction. The island of Singapore with the small islands of Pulau Ubin and Pulau Tekong in the Johore strait and a few smaller ones lying within English waters form the area the flora of which is enumerated in this paper. The whole is little more than 200 square miles in extent and consists of undulating country, the highest hill being Bukit Timah with an altitude of 500 feet above sea level. The Geology of the island was the subject of a paper by Mr. J. R. Logan (Journ. As. Soc. Beng. xvi. p. 519, published in 1846), but unfortunately he much misunderstood it, mistaking sedimentary rocks for volcanic ones. The bigger hills, Bukit Timah, Bukit Mandai, and Tanjong Gol, are composed of a grey granite, which crops out again near Bajau, Changi and Pulau Ubin. The rest of the island is covered with sedimentary deposits of clays, gravels, and sands, often very ferruginous and permeated with bands of clay-ironstone, very much resembling that of some of the Wealden beds in Kent. This clay iron-stone has unfortunately received the name of Laterite here, a name properly applied to soils baked by a lava-flow, or other volcanic heat. These sedimentary rocks have never produced any fossils except some obscure traces of vegetable remains. They appear to have been derived from disintegrated and decomposed granite, the ironstone bands being formed in many cases at a much later date. No borings of any depth having been made it is impossible to say how deep these strata are, but it is probable that they are of very great thickness and comparatively modern, as appears to be the case in Selangor and elsewhere. In the south of the island in some spots the strata are very strongly upheaved.

Originally the island appears to have been covered with a dense forest, except along the mangrove edged rivers and the sandy tract of country lying between Tanjong Ru and Changi point. But soon after it was acquired, a great deal of this forest was felled, partly for the value of the timber and partly for cultivation. Later a very large proportion of the cleared ground was abandoned, and became covered with secondary growth, or lalang, and every year still sees the disappearance of some woodland, so that in several of the localities quoted for certain plants in this list, such as Ang Mo Kio, few traces of any native plants can now be found. The names of many villages and districts are taken from trees which doubtless plentiful fifty years ago are now either very scarce or quite extinct. Such are Kranji (*Dialium*,) Changi (*Balanocarpus*), Tampenis (*Sloetia sideroxylon*), Tanjong Ru, the Cape of Casuarinas, Kampong Gelam, the village of *Melaleuca.* Extensively as the indigenous flora has been destroyed in this way, I have succeeded in finding most of the plants collected here by Wallich in 1822; and of those mentioned in his Catalogue which I have not recovered, some at least were evidently wrongly localised, having been probably collected in Penang. Many of the trees, however, which were probably formerly more abundant, are represented now by single specimens.

A few fairly large and representative tracts of jungle remain, and though in most cases much of the more valuable timber has been removed, these contain the most varied and interesting portions of the flora. Among the biggest trees therein are the *Dipterocarpeæ*, *Dyera*, *Dichopsis*, *Irvingia*, *Kumpassia*, species of *Mangifera*, *Artocarpus* and *Tarrietia*. Mixed with these are numerous smaller trees and shrubs of all orders, with rattans, and other palms, and especially in rocky spots and damp water-courses, are ground orchids, Scitamineæ, aroids, ferns, *Ebermaiera*, *Pentaphragma*, *Cyrtandræ* and many other smaller plants. Here too grow the curious little saprophytes *Thismia*, *Sciaphila*, *Aphyllorchis*, *Burmannia*, etc. Many climbing plants such as *Uncaria*, *Willughbeia*, *Bauhinia*, *Strychnos* and *Gnetum* form huge lianes climbing to the tops of the trees and covering them with a mat of foliage. On the branches of the loftiest trees grow many epiphytes not met with elsewhere, orchids, ferns, such as the rare *Davallia triphylla*, *Rhododendron*, *Vaccinium* and *Dischidia*, and it is interesting to note that many of these plants, which in the low country grow only on this elevated position, are to be met with as terrestrial or rock plants at greater elevations in the peninsula. The banks of the larger streams and rivers and a good portion of the coast line where mud is deposited are edged with a thick mangrove jungle composed of *Rhizophoraceæ* (*Rhizophora, Bruguiera, Ceriops*) *Carapa, Lumnitzera, Avicennia* and *Heritiera* on the branches of which grow abundance of small orchids, ferns, *Lycopodium, Psilotum, Heptapleurum, Pachycentria, Medinillopsis* and other epiphytes, while in the mud on suitable spots grow such herbaceous plants as *Acanthus. Cryptocoryne ciliata, Tristellateia, Octhocharis* and some Cyperaceæ and grasses. Inland just behind the mangroves the ground is often sandy and covered with woods of comparatively small trees, *Eugenia. Podocarpus. Gelonium, Argtera. Afzelia*, etc., with clumps of the Nibung palm (*Oncosperma tigilliaria*). and on these and on the ground grow many orchids, *Cirrhopetalum. Bulbophyllum. Coelogyne, Plocoglottis, Platyclinis*, and *Eria*.

The coast line from Tanjong Ru to Changi is also very sandy, and here is a very distinct flora much resembling that which borders the Pahang river near its mouth. It is rich in grasses and sedges, *Xyris, Cyanotis*, and other herbaceous plants, with bushes of *Rhodomyrtus, Vaccinium, Leucopogon, Capparis, Eugenia*, etc. Unfortunately a great portion of this district has been put under coconut cultivation, and the greater part of the flora has disappeared, except at Changi point where it still remains.

As a very large portion of the island has been cleared and cultivated, and often abandoned, there are very large tracts covered either with Lalang (*Imperata cylindrica*) or fern either *Gleichenia Linearis* or bracken, *Pteris aquilina* or in swampy spots with *Scleria* to the exclusion of almost everything else. In many places however secondary growth has sprung up (Belukar). This consists of small trees or shrubs of *Macaranga javanica* and *M. hypoleuca, Rhodamnia trinervia, Adinandra dumosa, Vitex pubescens, Melastoma polyanthum. Archytea Vahlii, Arthrophyllum diversifolium* and a few others.

In waste ground near villages and in cultivated spots are a number of weeds, many of which are well known as very widely distributed plants. and most of which have probably been introduced accidentally or intentionally at no very great distance of time. These weeds include most of the *Compositæ*. Grasses, *Labiatæ* and probably all the *Umbelliferæ* and *Solana-*

ceæ. It is perhaps worth noting that very few of these are to be found in Wallich's collection made in 1822, showing that in all probability they were introduced at a later date Among these weeds one or two are interesting as not occurring in India, such are *Clitoria cajanifolia*, and *Cleome aculeata*, both South American plants, which also occur as weeds in Java, whence probably they were carried accidentally to Singapore.

The flora geographically speaking is typically Malayan, and resembles as might be expected that of Johore, and to a certain extent that of the neighbouring coast of Sumatra. A few plants occurring here are as far as is known endemic, but it is probable that most will be re-discovered in the neighbouring countries, when they are more thoroughly explored. These endemic plants not known to occur elsewhere are marked with a *. The absence of certain plants common in the peninsula is somewhat remarkable, such are *Eurya acuminata* and *Grewia umbellata*, and there are several striking plants to be found on the neighbouring islands, and on the coast of Johore, especially near Tanjong Kupang, which are quite absent from our flora. Of the native flora it will be noticed that the greater number of plants are either trees or shrubs, herbaceous plants being comparatively scarce in the forests, and chiefly to be found in the open country in the sandy district of the coast. Those of the forest region being usually epiphytes, orchids, Piperaceae, or Scitamineae, aroids, grasses and sedges, with a few saprophytes.

The most extensively represented orders here are those of the *Euphobiaceæ*, *Urticaceæ*, *Rubiaceæ* and *Orchideæ*. The variety of the latter will surprise many residents who have probably seen not more than one or two species growing wild here, but the fact that these plants are very local and frequently occur on the upper branches of the loftiest trees, where they are difficult to see and to obtain, accounts for their being so often overlooked. The largest genera are those of the Figs (*Ficus*) and nutmeg (*Myristica*).

As in most equatorial regions, the number of species in proportion to the number of individuals is very large. A Malay jungle consists of innumerable trees, shrubs and climbers, all apparently distinct, and individuals of any one species occurring singly here and there, often very far apart, so that these forests have a very different appearance from those of the more temperate zones, which frequently consist of but one or two kinds. The contrast is well seen in comparing the English flora with that of Singapore. In Singapore with an area of 200 square miles we have over 1,900 species of flowering plants, while the flora of the British Isles with an area of 121,115 square miles produces but 1,200 species, while of ferns we have here over 130 species, nearly double the number in Europe, and more than three times the number in the British Isles.

Seasons. There is no great amount of difference in the rainfall throughout the year, although as a rule heavier falls occur in December and January than at other times, so that plants here have no definite resting periods and are nearly all truly evergreen. Certain plants, however, such as *Cratoxylon formosum* and *Ficus Miquelii* shed all their leaves at tolerably regular intervals, remaining quite bare for one or two days, when the young shoots begin to unfold, and in a few days they are quite leafy again. This change is often but not always followed immediately by the appearance of the flowers, and often the young leaves thus produced are of a brighter green, or brilliant red, orange, white or blue. This change takes place usually three or four times a year, and every tree of the kind in the district undergoes the change on the same day. It is not till we get north of Penang that we find a definite period of rest in which all or almost all plants shed their leaves altogether and become quite bare. A good series of observations on these phænological phenomena would probably throw light on the causes of these irregular seasons.

Very few plants have a definite flowering month. A large number flower more or less steadily throughout the year. Others flower at regular periods three or four times a year, almost every plant of a given kind flowering simultaneously in the district. This is best known in the case of the Pigeon orchid, *Dendrobium crumenatum.* In this plant the flowers are produced at periods of a little over a month, or two months. The exact day differs in different parts of the peninsula, but in each district they all appear in the same day, and it is remarkable that plants brought to Singapore even from as far north as Siam open their flowers on the day for Singapore, and not on that for Siam. It is not rare however to find certain plants of Pigeon orchid which do not flower on the regular day, but have a distinct day which they appear to keep to with equal regularity. A curious fact is that another species of *Dendrobium* (*D. criniferum*) invariably flowers in Singapore on the day preceding that of *D. crumenatum*, whenever that happens to be. It might be thought that the weather in the district in which the plant was growing was the influencing agent, but this appears to have but little effect on the orchids. On one occasion (Dec. 5, 1893) the pigeon orchids developed their flowers so far that they were obviously ready to open them on that day, but an extraordinarily heavy rain retarded them, and the flowers opened the next day, but except in cases like this the weather previous to the flowering does not seem to make any difference to the date of flowering. Some few plants have a regular annual flowering season, such are *Calanthe curculigoides* in September, and *Grammatophyllum*, July and August. A certain number of trees flower only every fifth year, notably the *Dipterocarpeæ*. Every fifth year there appears to be an average higher temperature, and a period of greater dryness in May or June than in other years, and then and only then is it possible to obtain flowers of these trees. Such trees are most of the *Dipterocarpeæ*, *xanthophyllum Kunstleri*, *Careya* sp. In this case also all the plants in a given district flower simultaneously. It can easily be understood that it is very important to a plant that all should flower on the same day in order that they may be cross-fertilized by the insects that visit them, and this is especially the case in plants in which the flowers last but a single day, as in the case of the Pigeon orchid, but it is difficult to see how this is brought about. A good many trees seem to flower even less often than this and there are not a few which though apparently full grown healthy trees have not given flowers once in ten years.

Colors of flowers.

As is well known the colors of flowers depend to a large extent on the kind of insect fertilizer for which they are destined to prove attractive. The most abundant insects in the thick jungle are the flies (*Diptera*) and these appear often in enormous abundance when certain trees are in bloom. The Oaks and

Chestnuts, *Sindora* and *Kurrimia* are particularly attractive to them and the roar of their wings can be heard often at some distance from the tree. The chief of these flies is a black *Musca* with red eyes. The flowers of fly-fertilized plants are usually small and green or whitish, generally possessing an unpleasant odor. Smaller herbaceous plants growing in dark shady woods often have deep brownish purple flowers sometimes with an odor of carrion, at others sweet and aromatic, such are *Amorphophallus*, *Thottea*, *Tacca* and many orchids. These are also fly-fertilized. Many trees produce masses of white flowers in large panicles or corymbs. These are very attractive to butterflies and bees, such are many of the Eugenias, *Evodia*, *Rhodamnia*, and *Melannorrhea*. I have noticed as showing the bearing of the color of the flowers on insect visitors, that while *Eugenia lineata* with corymbs of white flowers attracts innumerable butterflies and bees and the pollen-eating flies (*Syrpha*), another species of Eugenia with apple-green flowers, which is growing close by was not visited either by butterflies or bees, but by flies similar to those which visit the oaks. Pink flowers are not so common, and are usually visited by bees, as are the deep red blossoms of *Cratoxylon arborescens*, *Gomphia Hookeri*, and *Eurycoma*. Scarlet and bright reds are rare in Singapore except in introduced plants, but we have also the beautiful *Aeschynanthus*, *Rhododendron*, some *Loranthi*, and some species of *Hornstedtia*. The red flowers are most attractive to the Sun-birds, and to butterflies. Bright yellow flowers are chiefly to be met with in open country especially near the sea; such are *Wedelia*, *Xyris*, *Philydrum*, *Utricularia* (most), *Wormia*, *Timonius*, and *Gomphia sumatrana*. The rarest color of all is blue, which is also to be met with almost exclusively in open spots. *Burmannia coelestis*, *Commelina*, *Cyanotis*, *Urticularia affinis*, *Evolvulus*, *Monochoria*, *Desmodium heterophyllum*, are almost the only native blue flowers here.

Visitors to the tropics are often surprised by the apparent paucity and inconspicuousness of the flowers. This is partly due to the enormous proportion of foliage, which conceals the flowers, but the fact that the greater number of our flowers are adapted for fertilization by Diptera and small Hymenoptera, the most abundant insects in the forests, and are consequently small and green or whitish, accounts to a large extent for the small amount of show that the blossoms make in the great masses of foliage.

Botanists. The number of botanists who have collected or studied the flora of Singapore is even more limited than that of Penang. The first of them was naturally *Sir Stamford Raffles* who aided by *William Jack* made extensive collections. all or almost all of which were destroyed in the burning of the "Fame." (For an account of Jack and some others of the Singapore botanists, see Journal 25, p. 163). Shortly after the founding of Singapore *Nathaniel Wallich* came to Singapore to recuperate after his great Nepaul expedition. He remained here about five months and established the first Botanic Garden, Nov. 1822, being Superintendent of it. This Garden, consisting of 48 acres, included the Government Garden on what is now known as Fort Canning Hill. After he returned to Calcutta, Jan. 1823, Dr. Montgomerie took charge of the Garden till 1827. Wallich seems to have promised to send an assistant from Calcutta Gardens, but did not do so. The Garden, which chiefly contained Nutmegs and Cloves, was abolished later, and no trace of it remains. Dr. Wallich seems to have taken some interest in the development of Singapore, and was one of a committee of three to fix on the site of the town. He built a house, Botany Hall, to stay in during his residence here.

His collection of dried plants was an extensive one, and was eventually distributed with the rest of the East India Company's herbarium. The greater number of species which he discovered here I have been able to find still in Singapore, but some appear to have quite vanished. This is not surprising when it is remembered that at that time the district in which he was collecting, *viz.* the neighbourhood of the town, was thick jungle, of which nearly every trace has now disappeared under cultivation. In his Catalogue many of the plants are localised "Singapore et Penang," and as I note that many of these are strictly hill plants occurring at a higher elevation than there is in Singapore, I take it that these plants were in a collection of which the exact locality was lost, and that the label perhaps should have been rather "Singapore or Penang." Some few however of the specimens labelled as from this region have never since been found in the peninsula, e. g. *Xylia dolabriformis*, a well known Indian tree, and it is probable that the locality is quite wrong.

Col. Farquhar, the first Resident of Singapore, and *John Prince*, Resident Councillor in 1827, who took a little interest in the botany of the island, are commemorated in the names of some plants, e. g. *Myristica Farquhariana*, and *Erycibe Princei*, but little was done in botanical research for many years. In or about 1839, *Hugh Cuming* well known for his immense botanical and conchological collections in the Philippines, visited Singapore and also ascended Mount Ophir. While in the Straits he seems to have chiefly devoted himself to collecting orchids, and to have sent home a number of live ones, among which were *Coelogyne Cumingi*, and *Dendrobium longicolle*. *William Lobb*, orchid collector for Messrs Veitch, visited Penang and Singapore in 1845, but as mentioned in Journal 25, p. 166, his specimens from the Straits Settlements, Java and India were all mixed up in distribution, so that his localities as quoted in books are quite doubtful. Surgeon-General *Maingay* during his residence in Singapore made extensive collections, but many of these again were irregularly labelled, and some mentioned in the Flora of British India as from Singapore were probably either collected in Malacca or Penang.

Mr. Murton the first head of the present Botanic Gardens, 1875 to 1880, collected a number of plants, of which a few were sent to Kew, and a few, chiefly ferns, are still in the Botanic Gardens Herbarium. *N. Cantley*, who succeeded him, employed collectors and obtained a very large number of specimens, but unfortunately hardly any were strictly localised, and many labelled from Singapore in the herbarium, are either cultivated plants or from some part of the peninsula, so that in most cases I have been unable to quote safely from his herbarium.

Among other collectors whose names appear in books, associated to a small extent with Singapore plants, should be mentioned, Dr. *Thomas Oxley*, who wrote some papers in Logan's Journal, one of which dealt with the Flora of Singapore, but chiefly with Economic plants, while other papers treat of Nutmegs and Gutta percha. He seems to have collected plants, saying that he had collected between 40 and 50 orchids, but what became of his collections and manuscripts, I cannot find out. He died in or about 1858.

Sir Robert Schomburgk, well known for his explorations in Guiana, where he discovered the Victoria regia, was appointed British Consul in Siam in 1857. He visited Singapore and collected a few plants there, which he sent to Kew, and which were described in the Flora of British India. Some of them, however, were evidently obtained from gardens.

Dr. T. Anderson, 1832 to 1870, was Director of Calcutta Botanic Gardens. He appears to have visited Singapore at some time, and obtained several plants of interest. He devoted himself to the *Acanthaceae*, and *Eranthemum Andersoni* Mast, a common garden plant here was named after him.

Mr. R. W. Hullett made some years ago an excellent herbarium of Singapore plants, which he eventually presented to the Botanic Gardens. Duplicate specimens were sent to Kew and to Calcutta, where they were named, and several new species bear his name.

In the following list all plants with no collector's name were obtained by myself or by native collectors employed at the Gardens, and the numbers attached are those of my distribution-series. Endemic species, not yet known from elsewhere are marked with an asterisk and introduced plants, which have not properly established themselves but which occur in waste ground and the like, are included in brackets. The Mosses, Lichens, Fungi and Algae, are deferred. Collections of these have been made and submitted to experts, and I hope to publish an account of them at a later date.

DICOTYLEDONS.

DILLENIACEÆ.

Tetracera Assa Dec. A scrambling shrub often forming thickets, flowers white or pinkish. Common in open country, Balestier plain, Sepoy lines, Fort Canning, Changi.

T. Assa var. Garden Jungle. A very different looking plant, but Dr. King considers it only a large form.

T. euryandra Vah. Climber not rare, Cluny Road, Kranji.

T. macrophylla Wall. Climber common in woods, but seldom to be found in flower. Tanglin, etc.

T. fagifolia Bl. Not common. Woods, Garden Jungle, Selitar.

Wormia. Large shrubs or trees with showy yellow or white flowers.

W. suffruticosa Griff. A large bush in damp open country. The flowers are about 3 inches across bright yellow. The fruits when ripe split open like a star and are rosy pink inside, with small black seeds covered with a scarlet aril. The leaves are rather curious from the way in which the winged petioles are closed over the buds. It flowers constantly all the year. Tanglin, Jurong, Pulau Ubin, Pulau Tekong.

W. pulchella Jack. A small bushy tree with oval deep green leaves and pale yellow flowers. It grows in wet places, Tanglin, Bukit Timah Road.

W. tomentella Bl. A tall stout tree. Garden jungle, Selitar, Bukit Timah.

W. Scortechinii King. A small tree with inconspicuous apetalous flowers. Rare, Garden Jungle.

W. sp near *W. oblongifolia*, but having anthers hairy all over and white flowers. Bukit Mandai.

Dillenia indica L. This grand tree with its huge white flowers is doubtfully wild here. It occurs near the Reservoir, Bukit Panjang.

MAGNOLIACEÆ.

This order, chiefly of trees of the hill districts, is not unrepresented here.

Talauma lanigera Hook. fil. A large bush rather than a tree with large white flowers and stiff dark green leaves. Damp woods, near Chan Chu Kang, Ang Mo Kio, Kranji, Choa Chu Kang.

T. elegans Miq. *Aromadendron elegans* Bl. A tall tree with grey bark about 40 feet tall and a foot through. Flowers white sweet-scented. Rare. Garden Jungle.

Kadsura cauliflora Bl. A climber with rough corky bark and rosy flowers growing on the stem. Garden jungle, Bukit Timah, Kranji.

K. scandens Bl. "Akar Dama Dama." Forests, Bukit Timah, Bajau.

To this order also belong the Champaks *Michelia Champaka*, and *M. longifolia* Bl. often cultivated for their sweet flowers.

ANONACEÆ.

Stelechocarpus Burahol Hook. fil. "Singapore Lobb." This Javanese plant has never again been collected in the peninsula and is probably wrongly localised.

Cyathostemma Scortechinii King. A big climber bearing small green flowers on the stem, and rather large orange fruits. Common Garden jungle, Bidadari, Bukit Timah, Jurong, Pulau Ubin.

C. Hookeri King. Not common. Flowers yellow. Garden jungle.

Uvaria. Climbers with purple rarely yellow flowers.

U. dulcis Dunal. Rare, Bukit Timah.

U. Lobbiana Hook. fil. Garden jungle,

U. Ridleyi King. Bukit Mandai.

U. macrophylla Roxb. Common all over Singapore.

U. hirsuta Jack. Very hairy, flowers bright red. Garden jungle, Changi, etc. Common.

U. subrepanda Wall.* Singapore (Wallich No. 6483). A very little known species, only collected by Wallich.

Ellipeia cuneifolia Hook. fil. A lofty climber with yellow flowers. Common. Garden Jungle, Reservoir Woods.

Cyathocalyx virgatus King. A small tree with green flowers. Rare, Bukit Timah (Hullett).

C. Maingxyi Hook. fil. (Cantley's collection.) Perhaps wrongly localised.

Artabotrys. Climbers with white or green flowers, and very curious woody hooks by which the plant climbs.

A. Wrayi King. Flowers large. Cluny Road, Bukit Mandai.

A. suaveolens Bl. Flowers small. Common all over Singapore.

A. Maingayi Hook. fil. Tanglin.

Drepananthus pruniferus Maing. "Antoi hitam." A tall straight tree. Garden jungle, Kranji.

Unona discolor Vahl. "Akar Darah." Garden jungle.

U. dumosa Roxb. Cluny Road.

U. longiflora Roxb. Common, Kranji, Bukit Timah, Jurong, Garden jungle.

U. dasymaschala Bl. Common, Bukit Mandai. Chan Chu Kang Garden jungle.

U. desmantha Hook. f. A small tree with yellow flowers, Common, Garden jungle, Changi, Chan Chu Kang.

U. stenopetala var. A small tree with buff-colored flowers. Garden jungle, Changi, Bukit Timah.

Polyalthia. Small to medium-sized trees.

P. sumatrana King. Flowers green, fruit pink with darker blotches, rare. Chan Chu Kang.

P. Scortechinii King. "Kenanga hutan." A fairly large tree, with large yellow flowers like those of Cananga. Not common, Garden jungle.

P. macropoda King. A tree with large orange fruits very showy. Bukit Timah.

P. Teysmanni King. Common, Chan Chu Kang, Garden jungle.

P. bullata King. Stated in King's Materials to have been collected by me in Singapore, was collected by Cantley and perhaps wrongly localised. It occurs in Selangor and Perak.

P. cinnamomea Hook. fil. is from the same collection, and was also collected by Wallich in Singapore. I have never found it here.

Goniothalamus. Small or medium sized trees or shrubs.

G. malayanus Hook. fil. Bukit Timah, Pulau Damar.

G. Tapis Miq. Selitar, Jurong.

G. Ridleyi King. A medium-sized tree with large tufts of dull purplish flowers on the stem, chiefly at the base. Sungei Morai, Bukit Timah.

Orophea hastata King. Bukit Timah.

Popowia tomentosa Maing. A small tree. Not common, Garden jungle, Bajau.

P. ramosissima Hook. fil. Bukit Timah.

Oxymitra calycina King. Dense woods, Garden jungle.

O. affinis King. Sumbawang, Bukit Timah.

Melodorum. Climbers with yellow flowers usually sweet-scented.

M. fulgens Hook. fil. Common in thickets, Bukit Mandai, Toa Payoh, Tengeh, Chan Chu Kang.

M. manubriatum Hook. fil. Changi, Bedoh.

M. latifolium Hook. fil. Garden jungle, Toas, Selitar.

M. cylindricum Maingay. Common, Bukit Timah, Bukit Mandai, Chan Chu Kang, Loyang.

M. lanuginosum Hook. fil. Fairly common, Bukit Timah, Sumbawang, Jurong.

M. prismaticum Hook. fil. Garden jungle, Changi, Kranji.

M. elegans Hook. fil. Garden jungle, Selitar.

M. pisocarpum Hook. fil. Bukit Timah, Bukit Mandai, Toas.

Xylopia oxyantha Hook. fil. Singapore (Wallich 6478). Not seen.

X. dicarpa Hook. fil. * Singapore (Maingay). Not seen.

X. malayana Hook. fil. Not common, Bukit Arang, Chan Chu Kang.

X. caudata Hook. fil. Singapore (Wallich 6452) Maingay. Not seen.

X. magna Maingay. "Singapore Ridley" in Materials; was not collected in Singapore.

X. ferruginea Hook. fil. "Jangkang." A tall tree, flowers green, fruit long cylindrical red. Common, Bukit Timah, Selitar, Changi, Sungei Morai.

X. Ridleyi King. * Rare, Changi, Bukit Timah.

Phæanthus nutans Hook. fil. A shrub with green flowers. Common, Garden Jungle, Bukit Timah.

Ph. lucidus Oliver. Common. A bush. Bukit Timah, Garden Jungle, Tanjong Gol.

Mezzettia leptopoda Oliver. A very large tree with green flowers, and large globose fruit containing two very hard seeds, "Poko P'rah." Garden Jungle.

MENISPERMACEÆ.

Climbing plants with very small diœcious flowers and drupaceous carpels with the seeds usually curved.

Tinospora cordifolia Miers. Probably introduced. Macpherson Road, Balestier plain, Pulau Ubin.

Tinomiscium petiolare Miers. "Akar Lankap." A stout climber with milky juice, flowers white, fruit green with white spots. A decoction of the roots is used for rheumatism. Common in open woods, Garden Jungle, Siglap, Jurong, Bukit Mandai.

Fibraurea chloroleuca Miers. "Akar Kuning." A big woody climber with yellow juice formerly used in dyeing. The male flowers are white in large panicles on the stem. The females green. The fruit is about an inch long, orange-colored. Common all over Singapore.

Coscinium fenestratum Colebr. "Akar Kunyit, Kunyit Babi." A stout woody climber with large round leaves white beneath and large globular fruits. Common in woods. Chan Chu Kang, Changi, etc.

Hypserpa triflora Miers. A slender climber with narrow deep green leaves and small green flowers. Not common. Hedges, Tanglin, Selitar, Jurong, Chua Chu Kang.

Limacia velutina Miers. A low rather slender climber, the leaves covered with a velvety golden olive fur. Common in open country. Tanglin, Bukit Timah, Changi, etc.

L. Kunstleri King. A pretty little slender climber with white flowers and yellow stamens. Rare, on bushes by the sea. Changi beach.

Stephania hernandifolia Wall. A slender climber with peltate leaves, white flowers and red fruits. Edges of jungle, not rare. Chan Chu Kang, Bukit Mandai, Jurong.

Cyclea peltata Hook. fil. var. *Arnotti.* Miers. A slender climber with orbicular ovate hairy leaves, small hanging panicles of green flowers and white flat fruits. The natives boil the leaves with sugar and make a kind of jelly not remarkably delicious. Common in hedges, Tanglin, Chua Chu Kang, Pulau Ubin.

NYMPHEACEÆ.

Barclaya Motleyi Hook. var. *Kunstleri,* "Daun Kalapa." This grows in shallow muddy streams in thick jungle. It has round dark-colored leaves, and inconspicuous dull colored flowers, greenish or brown outside and yellow and pink within. Capsule pink. Local, Bukit Timah, Ang Mo Kio.

(*Nelumbium speciosum* Willd. The Lotus is often cultivated by the Chinese, but not wild here.)

CAPPARIDEÆ.

Cleome aculeatum Jacq. Cl. Hullettii. King. An introduced thorny weed with white flowers, native of the West Indies, occurs round Tanglin and Kallang.

Cl. viscosa L. A sticky weed about a foot tall, with yellow flowers, occurs near the town casually.

Capparis Finlaysoniana Wall. A thorny climber with large white flowers with a yellow spot in the throat, and a sausage-shaped red fruit. Rare. In sandy spots near Changi.

VIOLACEÆ.

The only genus represented here is the shrubby *alsodeia* with small yellow and white flowers.

Alsodeia echinocarpa Korth. "Sebilek." A shrub or treelet with ovate serrate leaves, small white flowers, and capsules covered with mossy hairs. The seeds are used as a purgative. Common in dry woods. Reservoir, Chan Chu Kang, Chua Chu Kang.

A. floribunda King. Woods near Ang Mo Kio.

A. membranacea King. Ang Mo Kio, Changi.

A. Kunstleriana King. Singapore (Wallich). Not seen.

Bixineæ.

Scolopia rhinanthera Clos. A shrub or small tree, thorny with with white flowers and black berries. Sandy spots near the sea. Changi, Serangoon River.

Flacourtia Rukam Zoll. A thorny tree, with small yellowish flowers and globose dull red berries, with a taste of gooseberries. Common in woods and even in thick jungle. and evidently truly wild, but also planted. Bukit Timah. Chan Chu Kang.

Fl. cataphracta Roxb. "Rukam." A similar tree with smaller leaves. I do not think it is wild though often cultivated and established here and there. It a much better eating fruit than the last.

Fl. inermis Cl. A larger tree, quite unarmed, with thinner narrower leaves. Jurong and Tanjong Karong.

Ryparosa Hullettii King. A small tree with slender spikes of green flowers. Rare in forests, Bukit Timah. Sungei Buloh.

Pittosporeæ.

Pittosporum ferrugineum Ait. "Giramong." A small tree with yellowish white flowers. Sea shores, Kranji, Changi, Selitar.

Polygaleæ.

Polygala brachystachya Bl. A little prostrate herb with yellow flowers, growing in turf or sandy spots. Not common, Gardens, Macpherson Road.

Salomonia cantoniensis Lour. A small branched weed about 3 inches tall with pink flowers. Common in waste ground.

S. oblongifolia Dec. Rare, sandy spots, Changi.

S. aphylla Griff. A very small buff colored saprophytic plant with minute flowers. Rare, in dense wet woods. Chua Chu Kang.

Trigoniastrum hypoleucum Miq. Small tree, flowers white. Bukit Timah.

Xanthophyllum. Large or small trees, with white or pink flowers and globose one or several seeded fruits. "Lima Beruk."

X. palembanicum Miq. A small tree, with white flowers. Woods, Garden jungle, Selitar.

X. obscurum Benn. A large tree with dark green shining leaves, flowers white tinted with rose. Fruit as large as a cricket ball, greyish green with a very thick woody rind orange color inside, and numerous seeds. Woods, Tanglin.

X. ellipticum Korth. A medium sized tree with deep green leaves. Flowers at first white then yellow, with a red calyx. Drupe globular orange turning dark red, with a sweet but rather soapy taste. Tanglin, Changi.

X. affine Korth. A small to medium sized tree, flowers white. The commonest species in the peninsula, but not common in Singapore. Woods, Bukit Mandai, Jurong, Bukit Timah.

X. Kunstleri King. A fair sized tree with dark green leaves, and golden buds, flowers white, fertilized by bees. Not common. Tanglin.

PORTULACACEÆ.

Portulaca oleracea L. Purslane. A common succulent prostrate weed with yellow flowers. Waste ground.

P. quadrifida L. A much smaller plant with tufts of white hair on the joints of the stem. Common in and round the town, on the wharfs, etc.

HYPERICINEÆ.

Hypericum japonicum L. Small herb with yellow flowers. Pepper plantations, Bukit Mandai, Chua Chu Kang.

Cratoxylon polyanthum Korth. Tree with loose red bark, flowers pink. Woods, Bukit Timah, Changi, Chan Chu Kang.

C. formosum Benth. A beautiful tree flowering twice a year. The flowers rose-pink, appear abundantly when the tree sheds its leaves. The leaves are red when just open, gradually becoming green. Common in open country, Tanglin, Bukit Mandai, Chua Chu Kang, Bukit Timah.

C. arborescens Bl. "Geronggang." A big tree 50 to 60 feet, flowers in panicles deep crimson. Woods, Garden jungle, Bukit Timah, Selitar.

GUTTIFERÆ.

Garcinia eugeniaefolia Wall. Tree, flowers white, sweet. Woods, Sungei Tengeh, Changi, Chan Chu Kang, Pulau Ubin, Tanjong Gol.

G. rostrata Benth. Flowers white or pink. Woods, Sungei Morai, Chan Chu Kang, Changi.

G. cuspidata King. Rare, Kranji.

G. Hombroniana Pierre. The peach-flavoured mangosteen. The tree resembles the common mangosteen, but the flowers are cream colored, the fruit smaller crimson, with a short beak on which is an entire dotted stigma, the rind is thin and scented like an apple, the pulp acid and scanty but peach-flavoured. Seashores, more rarely inland, Blakang Mati, Chan Chu Kang, Changi, Pulau Ubin.

(*G. mangostana* L. The mangosteen cultivated everywhere. A wild or reverted form with smaller more acid fruits, occurs near villages.)

G. atroviridis Griff. "Asam Gelugur." A beautiful tree, leaves bright red when young, deep green when old. Flowers large red. Fruit large succulent, flattened at both ends, and grooved all round, orange color stigma and persistent sepals red. It is dried in the sun and used in curries. It makes excellent preserves and pies. Doubtfully wild here. Tanglin, Tanjong Penjuru.

G. Griffithii T. Anders. "Kandis Gajah." Tree with large leaves. Flowers hardly opening greenish yellow. Fruit resembling an apple in form and color, acid, but eatable when cooked. Common in woods, Tanglin, Bukit Timah, Blakang Mati, Chan Chu Kang.

G. Bancana Miq. Tidal rivers, Kranji, Selitar.

G. nigrolineata Pierre "Kandis." Tree, unisexual, flowers small yellow, fruits small globose orange, eatable. Common, Woods and open country, Changi, Tengeh, Sungei Morai.

G. parvifolium Miq. Garden jungle.

G. Forbesii King. Small tree, flowers cream or pink, fruits small crimson, eatable. Not very common, Garden jungle, Bukit Mandai, Chua Chu Kang.

G. nervosa Miq. Rare, Pulau Ubin, Serangoon Road.

G. dulcis Kurz. "Mundu." Probably not wild here. Gardens and villages.

Calophyllum. Trees with white flowers and green or purplish drupes.

C. pulcherrimum Wall. Common, Garden jungle, Changi, Kranji.

C. spectabile Willd. "Bintangor Bunut." Garden jungle, Bukit Timah, Selitar

C. retusum Wall. Singapore, (Wallich).

C. canum Hook. fil. Not common, Tanglin, Bukit Mandai.

C. inophyllum L. "Penaga." Common on the sea shore. Bajau, Pulau Selitar, Pulau Ubin.

C. inophylloide King. Rare, Garden jungle, Changi.

C. Wallichianum Planch. "Bintangor Merah." Bukit Timah Chua Chu Kang.

C. Griffithii T. Anders. Rare, Sungei Morai.

C. macrocarpum Hook. fil. Changi.

TERNSTRŒMIACEÆ.

Trees with white or pink flowers usually rather small with many stamens.

Adinandra dumosa Jack. "Tiup-Tiup." A very common tree about 20 feet tall, with white flowers, which are fertilized by bees and wasps, and the pulpy fruit eaten by bats. Open country everywhere.

A. Hulletti King. Not common, Garden Jungle, Selitar.

A. acuminata Korth. Woods, Garden jungle, Sembawang, Chan Chu Kang.

A. maculosa T. Anders. Rare, North Selitar.

A. miquelii King. "Kwak." A very different looking tree with thick leaves and larger white flowers, and fruits of a Terustrœmia. Edges of Mangrove swamps, local, North Selitar, Changi, Sungei Morai, also woods, Bukit Timah.

A. sp. "Mongol." Rare, Bajau (4004).

A. near *integerrima* but less hairy. A big tree, Changi.

Ternstrœmia penangiana Choisy. A big dense tree with dark green leaves and white flowers. Fruit egg-shaped about 1½ inch long orange, splitting and showing 3 or 4 seeds enclosed in a red pulp. Dry woods near the sea. Bajau, Toas, Batu Putih, Changi, Pulau Tekong.

Sarauja tristyla Miq. Fern valley, Bukit Timah.

Pyrenaria acuminata Planch. A small tree with inconspicuous white flowers and small globular apple-like green fruits. Thick woods. Common, Bukit Timah, Tanglin.

P. Kunstleri King? Rare, Selitar.

Gordonia excelsa Bl. A tall tree with flowers like those of the tea plant but larger. Fruit a long woody capsule containing thin winged seeds. Rare, Selitar.

Var. with much larger coriaceous leaves, larger flowers and fruits. A very different looking tree, but referred by Dr. King to the same species. Common, Tanglin, Holland Road, Jurong, Changi.

Archytea Vahlii Choisy. "Riang-Riang." A bush or tall slender tree with pretty pink or white flowers. Common in secondary jungle. Tanglin, Jurong, Changi, Blakang Mati.

DIPTEROCARPEÆ.

Tall, often vast trees, with straight bare stems. Flowers large or small pink white or yellow, very sweetly scented. Fruit usually with two to four of the calyx lobes developed into long wings, by which the fruit drifts away from the tree in the jungle. The trees usually flower only once in five years. Very few flower annually. They supply good and useful timber, and the resin known as dammar and used for torches, and varnish, &c. Some also produce wood oil.

Dipterocarpus cornutus Dyer. "Minyak Keruing." One of the best wood-oil trees, even the fruits are often full of oil. Woods, Changi, Bukit Timah.

D. Hasselti Bl. Bukit Timah.

D. grandiflorus Blanco. This has very large winged fruits, 6 inches or more long, red. Bukit Timah.

Anisoptera glabra Kurz, "Mersawa." Garden jungle.

A. costata Korth. A gigantic tree with coppery looking leaves. Garden jungle, Dalvey, Bidadari.

Hopea Pierrei Hance. "Merawan." A tall straight tree with very small deep crimson flowers. Bukit Arang.

H. Griffithii Kurz. Garden jungle (No 4738).

H. micrantha Hook. fil. Singapore (Cantley).

H. Mengarawan Miq. A gigantic tree measuring as much as 18 feet in circumference. Common, Bukit Timah, Chan Chu Kang.

Shorea gratissima Dyer.* Flowers white. Common, Garden jungle, Kranji, Chan Chu Kang.

S. macroptera Dyer. "Kepong." The bark is used for building houses. Common, Garden jungle, Chan Chu Kang.

S. parvifolia Dyer. "Meranti daun Kechil." Bukit Timah, Garden jungle.

S. gibbosa Brandis. Flowers pink, Garden Jungle.

S. leprosula Miq. "Serayah batu." very common, Garden Jungle, Bukit Timah.

S. rigida Brandis.* Flowers white. Rare, Garden Jungle.

S. pauciflora King. Flowers yellow, Garden Jungle.

S. bracteolata King. Dalvey Road (No. 1827).

Cotylelobium flavum Pierre. Rare, Sungei Morai.

Vatica Ridleyana Brandis. Common, Garden Jungle, Bukit Mandai, Changi.

Pachynocarpus Wallichii King. "Damar Mata Kuching." Common, Garden Jungle, Kranji, Changi, Toas.

MALVACEÆ.

Herbs shrubs or trees with showy flowers.

Sida. Small shrubby plants with yellow flowers.

S. carpinifolia L. Common everywhere in waste ground.

S. rhombifolia L. "Silaguri Padang." A common weed used in native medicine for tooth-ache. Sepoy lines, Chan Chu Kang.

Abutilon indicum Don. Weed in waste ground. Alexandra Road, Pulau Ubin.

Urena lobata L. "Pulut-pulut." A very common weed with pink flowers opening in the early morning. The leaves are used for adulterating Patchouli, and it is cultivated for its fibre in America, where it is called Cesar-weed. Common in open dry spots; the variety *sinuata* with deeply lobed leaves occurs more usually near the sea.

Hibiscus, several species are cultivated, including *H. rosa-sinensis* L. the Shoe-flower, "Bunga Rayah," the flowers of which are used for blackening leather, and for coloring sweetmeats red. *H. abelmoschus* L. the Musk seed, "Kapas hantu," with large yellow flowers with a maroon centre, occurs cultivated and half wild. *H. Sabdariffa*, "Rosella," used as a vegetable or preserve. *H. esculentus* L. "Lady's fingers."

H. surattensis L. A prickly climbing or creeping plant, with yellow flowers and a maroon eye. Tanglin, Changi, Pulau Ubin.

H. tiliaceus L. "Baru." A common sea-coast tree with large yellow flowers with a maroon eye, turning pink soon after opening. All round the coast.

Thespesia populnea Corr. Tree very similar to the last. Sea coasts, common, Toas, Chan Chu Kang, Pulau Ubin.

(*Eriodendron anfractuosum* De C. The tree Cotton, "Kapok." Cultivated.)

(*Durio zibethinus* L. The Durian. Cultivated.)

D. oblongus Mast. A wild Durian, with green uneatable fruits. Woods, scarce, Bukit Timah, Bukit Mandai.

Neesia synandra Mast. The woody Durian. A big tree, with rather small flowers and large wooden blue-grey fruits, which partly open, the walls inside are covered with yellow stinging hairs. The seeds are black with a yellow waxy aril. Rare, Bukit Timah, Chan Chu Kang, Kranji, Chua Chu Kang.

Coelostegia Griffithii Benth. "Punggai." A very big tree with small flowers on the old wood and large round woody fruits, the outside, covered with thorns, is black, the inside brilliant orange. The bark is used in tanning. Rare, Bukit Timah, Garden Jungle.

Boschia Griffithii Mast. "Durian-Durian." A medium sized tree with small white flowers and little scarlet durians. Rare, Garden Jungle, Bukit Timah.

STERCULIACEÆ.

Sterculia macrophylla Vent. A big tree with large red pods. Rare, Reservoir Woods, Chan Chu Kang.

S. lævis Wall. A shrub or small tree with green flowers and scarlet pods which split open into 3 to 5 lobes in the form of a star, and show the oblong blue-black seeds suspended all round the margin. Woods, common, Tanglin, Bukit Timah, Pulau Ubin, etc.

Var with very narrow leaves. Chan Chu Kang, Bukit Mandai, Bukit Timah.

S. rubiginosa Vent. A small or medium sized tree very showy in fruit, flowers pink. Common, Tanglin, Bukit Timah, etc.

S. parviflora Vent. Big tree, Garden Jungle.

S. scaphigera Wall. "Kembang Samangko." A very large tree, often over 100 feet tall. The fruit in the form of a long green boat containing an oblong seed at one end. When the seeds are put into water the outer coat swells up and becomes mucilaginous, and this mucilage is eaten with sugar in the morning to cool the blood. Rare, Bukit Mandai.

Tarrietia simplicifolia Mast. A vast tree. Not common, Dalvey Road, Bukit Timah.

Heritiera littoralis Dryand, "Dungun." Sea shores, common, Bajau, Kranji, Pulau Tekong.

H. sp. Lofty tree in jungles. Garden jungle. Apparently undescribed.

H. fomes Buch. Ham. Mangrove swamps. Kranji.

Pterospermum diversifolium Bl. A gigantic tree, Pulau Ubin.

Pt. Blumeanum Korth. "Bayur." A big tree, dense woods, common, Bukit Timah, Sungei Buluh.

Melochia corchorifolia L. A common weed with small pink flowers. Waste ground everywhere.

[*Pentapetes phoenicea* L. A tall herb with deep red flowers. Waste ground, Tanglin, Blakang Mati.]

Buttneria Maingayi Mast. "Akar Kachubong." A big woody climber with curious little white and pink flowers and round prickly capsules. Common, Garden Jungle, Changi, Bukit Mandai, etc.

B. Jackiana Wall. Singapore, King's Materials. Not seen, probably an error.

Commersonia platyphylla Andr. "Durian Tupai." A common tree with white flowers, in large cymes and bristly capsules. Open country Tanglin, Jurong, etc.

TILIACEÆ.

Brownlowia lanceolata Benth. Rare, "Mangroves, Kranji.

Pentace triptera Mast. "Sepa Petri." Medang Serai." A gigantic tree with white flowers. Woods, common. Bukit Timah, Ang Mo Kio, Chua Chu Kang.

Grewia umbellata Roxb. A stout climber with white flowers. Common, Tanglin, Galang, etc.

G. fibrocarpa Mast. Small tree with orange fruits. Rare, Cluny Road

G. latifolia Mast. A large shrub with orange pear-shaped fruits about an inch long, and pleasantly flavoured. Flowers yellow. Tanglin, Bukit Timah, Chan Chu Kang.

The absence of the common peninsular shrub *G. paniculata* Roxb. is very remarkable.

Triumfetta rhomboidea Jacq. A common weed with small yellow flowers and prickly fruit. Waste ground, Tanglin, Changi, etc.

T. pilosa Roth. Singapore (King) not seen.

(*Corchorus capsularis* L. "Jute." Bukit Timah (Dr. King).

C. acutangulus Lam. Weed with yellow flowers, rare. Chan Chu Kang.

Echinocarpus sp. Tree with white flowers in axillary panicles. Very rare, Kranji (No. 6174).

Elæocarpus. Trees with white flowers, often showy, and blue or green drupes. "Mendong."

E. ganitrus Roxb. Cultivated only. The globose oily blue fruits contain a hard tubercled seed much in request by Tamils as a bead. It is usually 5 grooved, but very rarely a 6 grooved one is found, which commands as high a price as 5 dollars.

E. parvifolius Wall. Common, Tanglin, Changi, etc.

E. stipularis Bl. Very common, Tanglin, etc.

E. salicifolius King. "Jurunong Padi." Not common, Bukit Timah, Selitar.

E. paniculatus Wall. Common. Kranji, Bukit Mandai, Selitar.

E. petiolatus Wall. Common, Tanglin, Selitar, Changi.

E. Griffithii Mast. Common, Tanglin, Selitar.

E. Hullettii King. Not common, Bukit Timah, Bukit Mandai.

E. pedunculatus Wall. Sea shores, Loyang, Toas, Jurong, Pulau Tekong.

E. apiculatus Mast. Rare. Bukit Timah Road.

E. polystachyus Wall. "Jurunong Babi." Flowers buff, common in woods, Bukit Timah, Jurong, Teban, Changi.

E. Jackianus Wall. Not rare, Tanglin, Selitar, Bukit Mandai.

E. Masterii King. Common, Tanglin, Bukit Timah, Kranji, Changi.

E. sp. near *E. polystachyus*. Rare, Bukit Timah (4949, 3641)

LINEÆ.

Roucheria Griffithiana Planch. Climber, with yellow flowers, and small red drupes. Common in thickets and woods. Tanglin, etc.

Erythroxylon burmanicum Griff. A tree. Common near the sea.

Ixonanthes icosandra Jack. "Pagar Anak." Tree. Common, Tanglin, etc.

I. reticulata Jack. Less common, Woods, Garden Jungle, Bukit Timah, Bajau, Jurong.

MALPIGHIACEÆ.

Tristellateia australasica Rich. A slender climber, flowers yellow. Common by tidal rivers, and often cultivated. Toas, Kranji, Changi, Pulau Ubin.

Hiptage sericea Hook. fil. Scandent, but forming bushes in open sandy spots. Flowers pink and white. Rare, Changi, Bukit Mandai road.

Aspidopterys concava Juss. Climber, Forests, Bukit Mandai, Chan Chu Kang.

GERANIACEÆ.

(*Oxalis corniculata* L. A garden weed, common.)

(*Averrhoa Bilimbi* L. the Blimbing, and *A. Carambola* L. "Kembola," are cultivated.)

Connaropsis macrophylla King. Tree, flowers crimson. Not common, Selitar

RUTACEÆ.

A number of these are cultivated, among which are Rue *(Ruta graveolens)* the Kamuning (*Murraya exotica)* of the ornamental wood of which the sheaths and handles of Krises are made, the Lime berry, "Limau Keah" (*Triphasia trifoliolata*), the pumelo *(Citrus decumanus* L), orange (*Citrus aurantium*), various Limes *(Citrus medica* L.)

Evodia Roxburghiana Benth. "Stenga burong." A shrub with white flowers. Common in open country, Tanglin, Bedoh, Kranji, Jurong, Bukit Timah.

E. glabra Bl. A fine tree. Local, but not rare, Tanglin, Bukit Timah, Chan Chu Kang.

E. robusta Hook. fil. A tall tree. very conspicuous in flower. Not rare, Reservoir, Toas, Bukit Mandai.

E. pedunculosa Hook. fil.* A very little known plant, said to have been collected in Singapore by Lobb.

Zanthoxylum ovalifolium Wight· Wallich No. 7469, not seen.

Acronychia Porteri Hook. fil. A tree, usually small. Flowers and fruits green. Woods, common, Garden jungle, Bukit Timah, Changi, Jurong, Chan Chu Kang.

Glycosmis pentaphylla Corr. Common in woods and forests, a large shrub, flowers and fruits white. Garden jungle, Bukit Timah, Kranji, Selitar, etc ; a broad leaved form. A narrow leaved one occurs at Changi.

Micromelum hirsutum Oliv. Wallich (No. 8156 c.) Not seen.

Clausena excavata Burm. A small tree with white flowers, strongly scented foliage and semitransparent pink fruits. Doubtfully wild. Open country, Tanglin, Pulau Ubin.

Lurunga eleutheranthera Dalz. Climber, very rarely flowering. Changi, Bukit Timah.

Paramignya grandiflora Oliver. Very rare, Changi (Hullett); also collected by Lobb.

P. longispina Hook. fil. "Limau Lelang." A thorny shrub with curious pear-shaped orange aromatic fruits used in native medicine. Near mangrove swamps, Kranji, Jurong.

SIMARUBEÆ.

Brucea sumatrana Roxb. A shrub with aromatic foliage small purple flowers and black berries. Wallich (No. 8482). I have never seen this here, but on introducing some plants from Pahang, it established itself all about Tanglin, the seeds being borne about by birds.

Eurycoma longifolia Jack. "Bidara Pahit." An elegant shrub with a very bitter bark used in medicine against fever. Common in dry woods, especially near the sea. Tanglin, Changi, Bukit Timah, Blakang Mati, etc.

Irringia Malayana Oliver. "Pauh Kijang." A gigantic tree over 100 feet tall,with small green flowers, and fruit like mangoes, green with an orange pulp. Tanglin, Reservoir woods, Bajau, etc.

OCHNACEÆ.

Gomphia sumatrana Jack. Tree, flowers yellow. Common. Bukit Timah, Kalang, Toas, Changi, Pulau Ubin.

G. Hookeri Planch. Flowers deep red. Less common, near the sea. Changi, Tanjong Gol, Bukit Timah.

Tetramerista glabra Miq. Wallich (No. 1055). Not seen.

Euthemis leucocarpa Jack. An under shrub, very elegant with white flowers, and rosy, scarlet or white berries. Common in sandy woods. Kranji, Changi.

E. minor Jack. Singapore, according to Jack. I have only found it at Pulau Battam, south of Singapore.

BURSERACEÆ.

Trioma malaccensis Griff. A big tree exuding a very aromatic turpentine, fruit green three-winged, containing three oval flat-winged seeds. Not common, Garden Jungle, Bukit Timah.

Canarium Planchoni King. Not common, Bukit Mandai.

C. grandiflorum Benn. Flowers orange. Rare. Changi (Hullett), Bukit Mandai.

C. pilosum Benn. "Kedondon Krut." Not common, Changi.

C. rufum Benn. "Kedondon Bulan." A medium sized tree with creamy yellow flowers and large hard glaucous green fruits tasting of turpentine, with a triquetrous seed. Not rare, Tanglin, Selitar.

C. purpurascens Benn. Not common, Bukit Timah, Changi, Chan Chu Kang.

C. Kadondon Benn. "Tinou." Big tree, fruit erect pink. Garden jungle, Bukit Timah, Changi.

C. secundum Benn. Not common, Changi Road, Tanglin, Selitar.

C. nitidum Benn. Open woods, common, Changi Reservoir woods, Bukit Timah.

Trigonochlamys Griffithii Hook. fil. "Kumpas Ruman." Tanjong Gol. Kranji, Selitar.

Santiria laxa King. A large tree with a spreading head. Flowers in lax hanging hairy panicles deep red. Drupes plum-like rosy. A beautiful tree when in fruit. Garden jungle, Bukit Timah.

S. laevigata Bl. "Kerantei." A large tree, flowers green. Not rare, Selitar, Garden jungle, Bukit Mandai.

S. apiculata Benn. Flowers greenish white, fruits rosy. Bajau, Bukit Timah.

S. multiflora Benn. Not common, Selitar.

MELIACEÆ.

Sandoricum radiatum King. "Kechapi." Cultivated for its fruit. Wild on Pulau Ubin in thick woods.

S. indicum Lam. "Sentol." Cultivated commonly.

Chisocheton pauciflorus King. Thick woods, not common, Bukit Timah.

Ch. erythrocarpus Hiern. Not common, Pulau Ubin.

Ch. macrophyllus King. Rare. A big tree, Pulau Ubin.

Ch. patens Bl. A big tree with long racemes of white flowers, very fœtid. Common, Garden jungle, Bidadari, Changi, Selitar.

Dysoxylum acutangulum Miq. A tree with large orange-colored pear-shaped fruits. Changi.

D. costulatum Miq. A large tree, flowers white. Not rare, Changi, Chan Chu Kang, Bukit Timah.

D. macrothyrsum Miq. Selitar.

D. cauliflorum Hiern. A medium sized tree with white flowers on the stem, scented of almonds, and red capsules, containing black seed with a red aril. Common in thick woods, Changi, Chan Chu Kang, Bukit Timah, Pulau Ubin.

D. turbinatum King. Rare, Bukit Timah (8108).

Amoora Aphanamixis Schultes. Not rare, Toas, Bukit Mandai, Selitar.

A. rubiginosa Hiern. A superb tree, over 100 feet high, the leaves of a copper color beneath, flowers rose. Jungles, Chan Chu Kang.

A. cucullata Roxb. Tree, flowers yellow. Selitar (3778, 4575).

A. rubescens Hiern. Singapore (Maingay), Selitar.

(*Aglaia odorata* Lour. Cultivated for its sweet flowers.)

A. oligophylla Miq. Singapore. Wallich (No. 4887). Not seen.

A. glabriflora Hiern. Small tree, leaves deep shining green, flowers and fruits white. Local. Garden Jungle, Changi.

A. odoratissima Bl. Tree, flowers yellow. Not rare, Bukit Mandai. Chan Chu Kang, Bukit Timah, Reservoir Woods.

A. cordata Hiern. Rare, Selitar.

A. tenuicaulis Hiern. Singapore (Lobb), perhaps an error.

A. trichostemon Dec. Rare. Garden Jungle.

(*Lansium domesticum Jack*. The Duku ; cultivated.)

Carapa obovata Bl. "Nireh." A big tree, with sweet white flowers and large globular fruits, with corky seeds. The bark is used in medicine for dysentery. Mangrove swamps, very common, Kranji, Serangoon, etc.

CHAILLETIACEÆ.

Chailletia deflexifolia Turcz. A climbing or scrambling shrub, flowers white. Rare, Bajau.

OLACINEÆ.

Ochanostachys amentacea Oliver. "Petaling." A well known timber tree with leaves like those of a beech-tree, small spikes of green flowers, and green fruit with much white milk. Common, Garden Jungle, Changi, Reservoir woods.

Strombosia rotundifolia King. Woods, Bukit Timah, Garden jungle, Bukit Mandai.

Lepionurus sylvestris Bl. A small shrub, Garden jungle, Bidadari.

Ctenolophon parvifolius Oliver. Rare, Garden jungle.

Ximenia americana L. "Bidara Laut." A spiny shrub with white flowers and orange eatable drupes. The wood is scented. Sea coasts, Changi, Pulau Selitar, Jurong, Pasir Panjang.

Scorodocarpus borneensis Becc. "Kulim" A large timber tree with white flowers, all parts having a strong smell of onions. Common, Garden jungle, Bukit Timah.

Gomphandra penangiana Wall. A shrub common in woods. Bukit Timah, Garden jungle, Tanjong Katong, Selitar.

G. lanceolata Kurz. Not common, Bukit Timah.

Lasianthera secundiflora Miq. A large tree, flowers white. Rare, Bukit Mandai, Selitar.

Gonocaryum longeracemosum King. "Toioh." A large straggling shrub, with pendulous racemes of purplish green flowers; fruits green. Woods, not rare. Tanglin, Changi.

Phytocrene oblonga Wall. A large woody climber with dense racemes of small grey flowers growing on the stem, fruit wedge-shaped brown covered with brown bristles and forming a ball as big as a man's head. The seeds are cuneate oblong and curiously reticulated. Rare, Bukit Timah.

Ph. bracteata Wall. Common, open woods, Tanglin, Tanjong Katong, Bukit Panjang.

Iodes velutina King. Climber. Rare, Bukit Timah Road.

I. oblonga Planch. Not rare, Bidadari, Chan Chu Kang, Garden jungle.

Erythropalum scandens Bl. A slender climber with inconspicuous green flowers, and very curious and ornamental fruit, which at first is an oval drupe, but when ripe the husk becomes bright red and splits into 4 lobes, which recurve and expose a deep blue seed in the centre. Not common, woods, Bukit Mandai, Reservoir woods, Garden jungle.

Pteleocarpa malaccensis Oliver. A fair sized tree, flowers yellow, fruit round thin, winged. Rare, Changi woods.

ILICINEÆ.

Ilex cymosa Bl. A small or medium sized tree with very white bark, more rarely a bush. Flowers very small and green. "Timah-Timah" or "Titimah." Common in open country, Tanglin, Changi, Chan Chu Kang.

I. macrophylla Wall. Usually a smaller plant with larger leaves. Common, Garden jungle, Ang Mo Kio, Changi, Kranji.

CELASTRINEÆ.

Euonymus javanicus Bl. A large shrub. Woods, rare, Kranji, Sumbawang.

Glyptopetalum quadrangulare Prain. Not common, Changi beach, Chan Chu Kang.

Kokoona littoralis Laws. Singapore (Lobb). Not seen.

Lophopetalum fimbriatum Wight. "Krabu." A tree with yellow petals and the central disc purple. Rare, Bukit Mandai, Changi.

L. Curtisii King. A gigantic tree, rare. Bukit Mandai, Chua Chu Kang.

L. fuscescens Kurz.* Singapore. (Anderson.) Not seen.

Kurrimia pulcherrima Wall. A tall tree with small red flowers. Not common, Bukit Mandai, Gardens.

K. paniculata Wall. A large handsome tree with dark green leaves and panicles of small green flowers, with an unpleasant smell. Much frequented by flies. Fruit a heart-shaped red capsule. Common in dry woods, Tanglin, Chan Chu Kang, Bukit Mandai, etc.

Hippocratea indica L. A climber with very small white flowers. Local in sandy spots, Changi, Pulau Ubin.

H. Cumingi Laws. "Akar Bintang." Climber, flowers yellow. Sea coasts, Sungei Pandan, Kranji, Selitar.

Salacia grandiflora Kurz. "Ampedal Ayam." A shrub half scandent, gnarled, with black stems, small pearly flowers, and eatable orange coloured fruits. Woods and open country, Bukit Timah, Pulau Ubin, Changi, Toas.

Var. longifolia, Changi.

S. latifolia Wall. Singapore (Wallich No. 4222). Not seen.

S. prinoides De C. A slender climber (a large straggling shrub according to King), with very small brown flowers and small globular orange fruits. Not common. Garden jungle, Bukit Timah Road, Pulau Ubin.

S. flavescens Kurz. A climber with yellow or reddish flowers. Not common, Bukit Timah, Tanglin, Changi.

S. longiflora Hook. Half scandent shrub with buff flowers. Changi, rare.

S. sp. near *flavescens.* Rare, Changi (4785).

S. Lobbii Laws.* "Singapore Lobb." Not seen, very imperfectly known.

Celastrus Championi Benth. var ? Sungei Loyang.

RHAMNEÆ.

Ventilago leiocarpa Benth. A slender much branched climber with small green flowers, and small round fruit with a long narrow wing. Common, Garden jungle, Bukit Timah, Pulau Ubin.

V. madraspatana Gaertn. Rare. Bukit Mandai.

Zizyphus œnoplia Mill. A scandent thorny bush. Not common. Orchard Road.

Z. elegans Wall. (Wallich No. 4233). Not seen.

Z. calophylla Wall. A large climber very thorny dark green polished leaves, small white flowers and orange globose eatable fruit. Very common, Garden jungle, Bukit Timah, Selitar, etc.

Var. with small leaves, and smaller fruits. Selitar.

Z. Horsfieldi Miq. Rare, Bukit Timah.

Colubrina asiatica Brongn. A shrub with green flowers. Sea coasts, Galang.

Smythea reticulata King. Climber. Not common, near the sea. Toas, Serangoon.

AMPELIDEÆ.

Vitis macrostachya Miq. Hedges, common, Tanglin, Bukit Timah, Jurong.

V. gracilis Wall. Very common, Changi, Reservoir, Tanglin, Selitar, etc.

V. cinnamomea Wall. Not very common, Chan Chu Kang, Reservoir, Bukit Mandai.

V. polythyrsa Miq. Rare, Changi,

V. elegans Kurz. Hedges and borders of woods. Very common, Tanglin, Jurong, etc.

V. Lawsoni King. A big climber with large yellow grapes quite eatable. Woods, Bukit Timah, Garden jungle.

(*V. quadrangularis* Wall. An odd four-angled stemmed vine, with very few leaves; not native, but cultivated here and there.)

V. furcata Laws. A long vine with flat stems 4 angled green with thick bands of brown cork along the edge, grapes black. Common in dense woods, Bukit Timah, Bukit Mandai, Tanglin, etc.

V. repens W. and Arn. Hedges, Fort Canning, Chan Chu Kang.

V. cerasiformis Teysm. Bukit Timah.

V. glaberrima Wall. A succulent vine with grey four angled stems and red tendrils, berries black. Very common in hedges. "Asam Riang". Tanglin, Changi, etc.

V. mollissima Wall. "Lakom Gajah." A hairy vine with trifoliolate leaves and large dirty white grapes. Common, Cluny Road, Sungei Buluh, Reservoir woods.

V. trifolia L. Very common, hedges, Reservoir, Race Course, Kalang Puding.

V. Japonica Thunb. "Singapore." Not recognised.

V. novemfolia Wall. A slender vine with large semitransparent pink grapes, quite uneatable. Common, Tanglin, Chua Chu Kang.

V. sp. Leaves simple, flowers very small green in axillary panicles, crowded at the ends of the branches. Rare, Selitar.

Pterisanthes coriacea Korth. A very slender vine remarkable for its long flattened crimson flower spikes 3 or 4 inches long one or 2 wide; female flowers small sunk in the spike, males on stalks along the edge, grapes black. Local in thick woods, Chan Chu Kang, Bukit Mandai, etc.

Leea. Large shrubs with green or red flowers in corymbs. "Malli-malli".

L. sambucina Willd. Six to ten feet tall, flowers greenish white. Very common in damp spots. Tanglin, Bukit Timah, Selitar.
Var. *biserrata.* Chua Chu Kang.

L. robusta Roxb. Rare, Blakang Mati.

L. rubra Bl. A smaller plant with red flowers, very pretty. Tanglin, perhaps introduced.

L. Javanica Bl. Singapore (Schomburgk). Not seen.

L. angulata Korth. "Malli biduri." Passir Panjang.

SAPINDACEÆ.

Cardiospermum Halicacabum L. the Balloon vine, is cultivated by the Chinese as a vegetable, and occurs in waste ground. Pulau Ubin, Rochore.

Allophylus Cobbe L. A sea shore shrub with white flowers and red berries. The var. *racemosa* is the only one here. Common, Kranji, Selitar, Jurong, Alexandra Road.

Erioglossum edule Bl. "Mertajam." A tree, with small black unpleasantly flavoured fruits. Common, especially near town. Government Hill, Pulau Ubin.

Xerospermum muricatum Radlk. "Rambutan Pachat." A small tree, flowers white, fruit yellow roughened outside, seed enclosed in eatable pulp. Common, Tanglin, Bukit Mandai, Bukit Arang.

X. Wallichii King. Singapore, Wallich (not seen).

Nephelium lappaceum L. "Rambutan." *N. Longana* Camb.; "Mata Kuching:" *N. chryseum* Bl. "Pulassan," are cultivated.

N. glabrum Noronha. "Redan." Fruits warted red, acid. Tanglin, Chan Chu Kang, Toas.

N. rufescens Hiern. Chan Chu Kang.

N. eriopetalum Miq. A beautiful tree with white flowers in hanging spikes, and scarlet fruit like rambutans. "Sunggol Lotong." Bukit Timah, Garden Jungle.

Pometia gracilis King. Woods, Bukit Timah.

P. alnifolia Radlk. Chan Chu Kang, Bukit Mandai.

Guioa pleuropteris Radl. Tree, flowers white. "Simpayan Ular." Common, Bentley's hill (Hullett), Bukit Timah, Selitar.

G. squamosa Radl. Bukit Timah, Selitar.

G. pubescens Radl. Very common everywhere.

Trigonachras acuta Radl. Rare, Bukit Timah.

Arytera littoralis Bl. var. *Major*. A shrub or small tree. Sea-coasts, Chua Chu Kang.

Mischocarpus fuscescens Bl. Bukit Panjang, Pulau Ubin.

M. sundaicus Bl. Tampenis, Serangoon, Changi.

Paranephelium macrophyllum King. Very large tree, with pink flowers, fruit woody covered with processes, brown dehiscing. Bukit Timah.

Turpinia pomifera De C. "Geritta." Medium sized tree, flowers and fruits green. Woods, Bukit Timah, Tanglin, Bukit Mandai.

SABIACEÆ.

Meliosma elliptica Hook. fil. Tree, rare. Chan Chu Kang.

M. lanceolata Bl. Small tree, not rare. Chan Chu Kang, Jurong, Bukit Mandai

M. Ridleyi King. Common, Garden jungle, Bukit Timah. It also occurs in Johore, near Castlewood.

ANACARDIACEÆ.

Buchanania florida Schauwer var. *lucida.* "Otak Hudang." Tree with white flowers. Common in open country and low woods, Tanglin, Changi, Kranji. Var. *petiolaris* not common, Selitar.

B. sessilifolia Bl. Common, Chan Chu Kang, Jurong, Tampenis'

Bouea burmanica Griff. "Ruminiya." A big tree with small acid orange mangos, common, wild and cultivated.

(*B. macrophylla* Griff. "Kedondong." Cultivated as a fruit tree.)

Mangifera sclerophylla Hook. fil. A gigantic tree. Rare, Bukit Timah, Changi.

M. odorata Griff. "Kohini." Bukit Timah, Toas; perhaps only cultivated.

(*M. foetida* Lour. "Bachang." Cultivated.)

M. lagenifera Griff. "Lanjoot." A magnificent tree, with purple flowers and large grey pear shaped mangoes, very unpleasant to eat. Jurong, Blakang Mati, etc. Cultivated.

M. kemanga Bl. "Kemang." Probably only cultivated, rare.

M. indica L. "Mango." Cultivated.

Anacardium occidentale L. Cashew. "Gajus." Cultivated and often established. Common near the sea.

Melanorrhea Maingayi Hook. fil. "Rengas Manau." A big tree with white flowers, and red 5-winged fruit. A well known timber. Common, Bukit Timah, Changi, Kranji, Selitar.

Parishia pubescens Hook. fil. A lofty tree, 150 feet tall, flowering before the leaves come out, flowers white. Very rare, Dalvey Road.

P. paucijuga Engler. Rare, Bukit Timah.

P. Maingayi Hook. fil. Garden jungle.

Campnosperma Griffithii Hook. fil. "Teruntang." A large tree, with big leaves especially when young. Common, Bukit Timah.

C. auriculata Hook. fil. Common in woods. Tanglin, Bukit Timah, Selitar, Teban.

C. Wallichii King. Dalvey Road, Bukit Mandai, Toas.

Melanochyla auriculata Hook. fil. A big tree, with very large stiff leaves and panicles of green flowers fertilized in the evening by brown cockchafers. Wet jungles, Chan Chu Kang.

Dracontomelum mangiferum Bl. Rare, Chua Chu Kang.

CONNARACEÆ.

Connarus ferrugineus Jack. A scandent shrub. Not common, Bukit Mandai.

C. semidecandrus Jack. A half scandent bush with lilac flowers, and red pods containing one black seed with a red aril. Dry open country, Toas, Changi, Selitar, Bukit Mandai.

C. oligophyllus Wall. Bukit Mandai, Changi.

C. grandis Jack. Local. Changi, Pulau Ubin.

C. ellipticus King. Bukit Mandai.

Ellipanthus Griffithii Hook. fil. A tree with small white flowers Garden jungle.

Rourea acuminata Hook. fil. Singapore, Wallich (8533). Not seen.

R. pulchella Planch. Lofty climber. Garden jungle, Changi.

R. rugosa Planch. "Semilat putih." Common, Changi Road, Selitar.

R. parallela Planch. Sungei Buluh, Changi, Kranji.

R. fulgens Planch. "Semilat." A tall slender climber with pink and white flowers. The young leaves of a beautiful pink, whence the specific name. A very beautiful plant. The bark is used by natives for colic. Very common, Tanglin, Bukit Timah, Teban.

R. concolor Bl. Not rare. Teban, Reservoir Woods, Chan Chu Kang.

Agelæa vestita Hook. fil. "Akar Kachang-kachang." A climber with small pinkish flowers and red velvety pods. Common in forests, Tanglin, Sumbawang, Bukit Timah, Changi.

A. Wallichii Hook. fil. "Akar Kachang jantan." Changi.

A. Hullettii King. Local, Changi.

Cnestis ramiflora Griff. A climber with brilliant pink shoots, white flowers, and large pear-shaped red fruits. Common in dry woods and open country. Tanglin, Changi, Tanjong Penjuru.

LEGUMINOSÆ.

Abrus precatorius L. A slender climber with pale lilac flowers and red and black seeds. A variety with white seeds occurs and is highly prized by the natives as a medicine. Sea shores, Changi.

Crotalaria alata Ham. "Kachang Hantu Darat." A herb with yellow flowers. Local waste ground, Tanglin, Changi, Jurong, Ang Mo Kio.

C. retusa L. A glaucous herb with showy orange yellow flowers. Sandy shores, Changi.

C. Saltiana And. A common weed in waste ground, and sandy-places, yellow flowers. Changi, Galang, etc.

C. quinquefolia L. Rare, Kranji.

C. incana L. Flowers yellow. Sea shore, Tanah Merah.

Flemingia strobilifera Br. A shrub. Sea shores, not common, Changi, Blakang Mati.

Vigna retusa Walp. A small yellow vetch. Sea shores, Changi, Blakang Mati.

(*V. Catiang* End. "Kachang Perut Ayam." Cultivated.)

(*Pachyrrhizus angulatus* Rich. "Bengkuang." "Sengkuang." The yam bean is cultivated.)

(*Dolichos Lablab* L. "Karkaras". Flowers blue or white, cultivated.)

Psophocarpus tetragonolobus De C. "Kachang Botor." Cultivated.)

(*Clitorea Ternatea* L. Cultivated.)

C. cajanifolia Benth. A shrub with large lilac white flowers, naturalised from Brazil, round Tanglin, etc. Very common.

Centrosema Plumieri Benth. The "Butterfly pea," climber, flowers white with dark crimson centre. Naturalised in hedges near town.

(*Canavalia ensiformis* De C. "Kachang Parang." Cultivated.)

C. lineata De C. A creeping bean with pink flowers sweet-scented, beans eatable. Sea shores, common, Changi, Blakang Mati.

C. obtusifolia De C. A climber on bushes, flowers pink. Beans said to be poisonous. Sea shores, Toas, Changi.

Mucuna gigantea De C. Climber, flowers greenish white. Not common, Blakang Mati.

M. biplicata Teysm. Flowers purple. Chan Chu Kang.

(*Erythrina stricta* and *E. lithosperma* Miq. are planted here and there, but not wild.)

Spatholobus ferrugineus Benth. "Akar Sejangat." A big liana, one of the best of the water vines, climbing to the tops of the highest trees, flowers deep purplish small. Common, Tanglin, Chan Chu Kang, etc.

S. Maingayi Prain. Flowers rosy. Woods, Bukit Timah, Garden jungle.

S. Ridleyi Prain. * Big climber, flowers white. Gardens, Chan Chu Kang.

Indigofera hirsuta L. Sea shore, Teluk Kurau.

Sesbania paludosa Roxb. Rare. Marsh near Kranji.

(*S. grandiflora* Pers. Tree with large white or pink flowers. Cultivated for its flowers, and for the leaves eaten as a vegetable.)

(*Tephrosia candida* De C. given for Singapore in the "Materials," is only a garden plant.)

T. Hookeriana W. & A. Waste ground, Bidadari, probably an escape.

Millettia eriantha Benth. A lofty climber with coppery red flowers with a greenish yellow centre to the standard, outside covered with golden fur. Not very common, Bukit Mandai, Garden jungle.

M. Maingayi Bak. A big climber with large hanging panicles of pink flowers deliciously scented. Pods oblong woody, about 4 inches long, one seeded, wrinkled and covered with fine grey fur. Not common, Tanglin, Chan Chu Kang, Reservoir woods.

M. atropurpurea Benth, is probably not wild here. A fine tree occurs in a garden in Paterson Road.

Pongamia glabra Vent. "Malapari." A tree with pink flowers. Common on the sea coasts. Changi, Siglap, Jurong, Pulau Ubin.

Derris sinuata Thw. Woody climber, flowers green and white. Tidal rivers, Pulau Ubin.

D. thyrsiflora Benth. Scandent bush, flowers in dense erect panicles, white, pods long and thin, reddish when white. Very common in open country, Tanglin, Changi, etc.

D. uliginosa Benth. "Akar Ketuil". Scandent shrub, flowers pink. Common on sea coasts and by tidal rivers Rivers Valley Road, Changi, Pulau Ubin, Kranji, Bajau.

D. scandens Benth. Flowers white. Pulau Merambong.

D. amœna Benth. Climber, flowers pink. Not common, Garden Jungle.

(*D. elliptica* Benth. "Tuba." Often cultivated for killing insects on vegetables, and catching fish).

D. Malaccensis Prain. Flowers pink. Jurong, Selitar.

D. oblonga Benth. Flowers dark pink. Changi (No. 6086).

D. sp. with very velvety leaves. Rare, Chan Chu Kang, Changi (6087).

Kunstleria Ridleyi Prain.* Big climber, flowers small purple almost black. Woods, common but rarely flowering. Garden jungle, Selitar.

Dalbergia Junghuhnii. Benth. A woody climber with small greenish white flowers. Woods common, Tanglin, Changi, Pulau Ubin, Sumbawang.

Var. *Scortechinii.* Bukit Timah (6406).

D. velutina Benth. Rare, Changi.

D. pseudosissoo Miq. Climber, flowers white. Common, Garden jungle, Bukit Mandai, Changi, Selitar, Bajau.

D. Hullettii Prain. Flowers white produced when the leaves are fallen. Rare, Thomson Road, Selitar.

D. torta Grah. Climber, flowers white. Mangroves and sea shores. Common, Pulau Ubin, Kranji, Pulau Damar.

Pterocarpus indicus Willd. The Angsana, or Sena, planted only.

Zornia diphylla Pers. Prostrate herb, flowers yellow. Sandy places, Galang, Changi.

Uraria crinita Desv. Small shrubby plant with a tall spike of blue flowers, very beautiful ; on banks sporadically. Orchard Road, Scott's Road.

Alysicarpus vaginalis Miq. A slender herb, flowers black purple. Changi, Teluk Kurau.

Var. *nummularifolia* Pulau Ubin (Kunstler).

Æschynomene indica L. Shrubby weed, Galang.

Desmodium triflorum De C. Prostrate herb in grass, flowers pink· Common, Tanglin, Changi.

D. heterophyllum De C. Common over the whole island.

D. umbellatum De C. A big shrub, flowers white. Sea coasts all round the island.

D. polycarpum De C. A shrubby plant with erect racemes of deep crimson, or rarely white flowers. Common in open country, Tanglin, Changi, Selitar, etc.

Var. *ovalifolia.* Rare, Ang Mo Kio.

Ormosia macrodisca Bak. A big tree, flowers pink, pod round and flat reddish pink with a large scarlet and black seed. Rare, one tree in Cluny Road.

O. parvifolia Bak. Not a very large tree, leaves small deep green, flowers white, pod round, seed red. Not rare. Blakang Mati, Changi, Pasir Panjang, Reservoir.

O. microsperma Bak. Var. *Ridleyi*. Tree about 50 feet tall, flowers white. Rare, Selitar, Tanglin.

Cassia obtusifolia L. A common weed with yellow flowers. Waste ground, Tanglin, Galang.

C. hirsuta L. A hairy weed with yellow flowers. Common, Tanglin, etc.

C. occidentalis L. A common weed.

C. alata L. "Gelenggang, Daun Kurap." Shrub with showy yellow flowers. Common round villages.

C. siamea Lam. Tree, yellow flowers. Occurs near Tanglin, but doubtfully wild in Singapore.

C. Leschenaultiana De C. A pretty shrublet with yellow flowers. Common round Tanglin, Bukit Mandai.

Kumpassia malaccensis Maing. "Kumpas." A gigantic tree with hard red wood. Common all over Singapore.

Dialium laurinum Bak. Kranji, Bukit Timah.

D. Maingayi Bak. Bukit Timah.

D. Wallichii Prain. Common, Garden jungle, etc.

The Dialiums are big trees, which supply the well known timber "Kranji." The fruit, a velvety black pod filled with a sweet pith enclosing a single seed, is eaten by natives and sold in the shops.

Bauhinia purpurea L. is quoted in books for Singapore, but is only in cultivation.

B. semibifida Roxb. Climber with white flowers. Common, Bukit Timah, Bukit Mandai, etc.

Cynometra cauliflora L. "Nam-nam." Cultivated

C. ramiflora L. var *heterophylla*. Shrub. Rare, river banks, Sungei Jurong.

Sindora Wallichiana Benth. "Saputi." A very fine tree, with green flowers. The calyx is covered with soft processes, not firm prickles as has been described. The flowers are fertilized by flies, which visit them in such quantity that I have heard the roar of their wings from the base of a very lofty tree, when in flower. The pods are flat, usually one seeded and covered with prickles which exude a gum. Garden jungle, Changi, Dalvey Road.

S. intermedia Bak. Changi, Blakang Mati.

Afzelia retusa Kurz. A small tree, flowers white; sea coasts, common, Bajau, Changi, Pulau Ubin. Selitar, Serangoon.

Peltophorum ferrugineum Benth. "Batai." A handsome tree with yellow flowers. Rare, Changi.

Cesalpinia nuga Ait. Thorny climber, flowers yellow. Sea shores Changi, Selitar.

C. tortuosa Roxb. Rare, Selitar.

Mezoneuron sumatranum W. and Arn. A very thorny climber with erect racemes of tubular flame-coloured flowers and thin flat pods bright red. Either in fruit or flower, this is a most beautiful plant. Not very common. Along the Bukit Timah Road. Sungei Jurong.

Parkia speciosa Hassk. "Petai." A tree with pear-shaped heads of small yellowish flowers on long hanging peduncles, and flat green pods, eaten by the Malays. Common wild and also planted. Bukit Timah, Bajau, Changi, Selitar, etc.

Entada spiralis Ridl. Woody climber with curious curled pods and very large brown subtriangular seeds. Common all over Singapore.

Adenanthera pavonina L. "Saga." Commonly planted and perhaps wild.

A. bicolor Moon. A more compact tree than "Saga," the seeds half red and half black. Bukit Timah, Bukit Mandai, Bedoh, Pasir Panjang, etc.

Neptunia oleracea Lour. The water-sensitive plant, a floating plant with bright yellow flowers Cultivated as a vegetable and formerly very abundant in Singapore, now rather uncommon.

Xylia dolabriformis Benth. "Singapore Wallich No. 5279." This has never again been found in the peninsula, and is probably wrongly localised.

Leucæna glauca Benth. Occurs near villages, doubtless planted

Mimosa pudica L. The sensitive plant, is a well known pest over the whole island.

M. sepiaria Benth. An introduced shrub very common along the Bukit Timah Road, Dalvey Road, and near the Reservoir.

Acacia pseudo-intsia Miq. A scrambling thorny shrub. Not rare, Bukit Mandai, Changi, Toas, Chan Chu Kang.

A. pennata Willd. A thorny climber, climbing very high. Tanglin, hedges and thickets.

Serianthes grandiflora Benth. Singapore (Wallich). Not seen.

Albizzia littoralis Teysm. A tree with pink heads of flowers. Rare, Pulau Ubin.

A. pedicellata Bak. Rare, Kranji Road.

A. lucida Benth. Singapore *fide* Baker, possibly from a cultivated specimen.

A *odoratissima* Benth. *A. Lebbek* Benth. A. *moluccana*, sometimes planted, establish themselves in many places.

Pithecolobium dulce Benth. Cultivated only.

P. confertum Benth. A tree, rare, Bedoh, Selitar.

P. bubalinum Benth. Rather rare, Tanglin.

P. lobatum Benth. "Jering." Tree with fœtid pods, very popular with Malays. Common over the whole island.

P. microcarpum Benth. A common little tree with white flowers and bright orange curly pods, very pretty when in fruit. Tanglin, Chan Chu Kang, Bukit Timah, etc.

P. ellipticum Hassk. "Jering hutan." A large tree with big curled orange pods from which when ripe hang black seeds covered with a grey bloom. Not rare, Selitar, Pulau Ubin.

P. contortum Mart. Common, Tanglin, Changi, Selitar, etc.

P. clypearia Benth. Common, Selitar, etc.

P. angulatum Benth. Very common in open country, woods, etc. Tanglin, Changi, Chan Chu Kang, etc.

ROSACEÆ.

Parinarium costatum Bl. A big tree with white flowers and hard brown drupes with white dots. Rare, Chan Chu Kang.

P. oblongifolium Hook. fil. "Balau." A well known timber tree of great size with large leaves white beneath. Rare, Bukit Timah, Bukit Mandai.

P. Griffithianum Benth. A big tree with deep green leaves, corymbs of white flowers and yellow plum-like fruits. Local, Fort Canning, Changi.

P. nitidum Hook. fil. "Kelat Layu hutan." A medium sized tree with very small red eatable plums. Bukit Mandai Chan Chu Kang.

Parastemon urophyllum De C. Sandy places near the sea, Changi, Chan Chu Kang,

Pygeum Maingayi Hook. fil. Tree with white flowers clustered on the branches. Not common, Cluny Road.

P. lanceolatum Hook. fil. "Singapore Lobb." Doubtless an error for Penang.

P. polystachyum Hook. fil. A fair sized tree, flowers whitish, scent of almonds. Common, Tanglin, Bukit Timah.

P. persimile Kurz. Rare, Kranji Road.

Rubus Moluccanus L. The common wild raspberry, fruit red small and very poor. Thickets over the whole island, very common.

R. glomeratus Bl. I doubt this than a variety, it has a longer terminal panicle and more entire leaves, and usually replaces typical *R. Moluccanus* in the hills ; I have gathered it however in Jurong.

SAXIFRAGACEÆ.

Polyosma fragrans Benn. Wallich No. 8472. Not seen.

P. Ridleyi King. * Tree with white flowers. Rare, Selitar.

RHIZOPHOREÆ.

Rhizophora mucronata Lam. "Belukup." A common mangrove used for firewood. All mangrove swamps. Jurong, Bajau, Changi.

R. conjugata L. "Akit." Common, Bajau, Jurong, Selitar.

Ceriops Candolleana Arn. "Tengah." Common. Bark used in dyeing either a red brown when used alone, or purple or black in combination with Indigo.

Bruguiera eriopetala W. and A. Common, Bakau, Kranji, Jurong.

B. gymnorhiza Lam. Common, Jurong, Changi, Sungei Miora.

B. caryophylloides Bl. "Bakau Putih." Very common, River Valley Road, Selitar, Serangoon, Jurong, Pulau Ubin.

B. parviflora W. & A. "Lenggadi." Common, Serangoon, Jurong.

Carallia Scortechinii King. Tree, rare, Changi.

Pellacalyx axillaris Korth. Tree, common in secondary growth. Bukit Timah, Tanglin, Chan Chu Kang.

P. Saccardianus Scort. Tree. Common in woods, Bukit Timah.

Gynotroches axillaris Miq. "Mata Keli." Tree with whorls of small greenish flowers, and very small red or black berries; very common in secondary jungle and woods, all over the whole island.

Anisophylleia disticha Baill. An elegant shrub with pendulous branches and distichous leaves. Common in woods, Tanglin, Changi, Selitar, etc.

A. Griffithii Oliver. Rare, Chan Chu Kang.

COMBRETACEÆ.

Terminalia phellocarpa King. "Mampelam Babi." A tree with small white flowers and large green fruit. Not rare in damp spots in woods, Bukit Mandai, Holland road, Bukit Panjang, Chan Chu Kang.

T. Catappa L. "Ketapang." Common along the coasts, and often planted along road sides.

T. subspathulata King. A very large tree with winged fruits. Near the Garden jungle, Bukit Timah Road.

Calycopteris floribunda Lam. "Singapore Lobb." Doubtless an error for Penang.

Lumnitzera coccinea W. & A. Tree with panicles of scarlet flowers. Common near the sea. Bajau, Serangoon, etc.

L. racemosa Willd. Flowers white, Jurong.

Combretum trifoliatum Vent. I have found fruits of this floating in the sea near Singapore.

C. sundaicum Miq. Climber, flowers green, Changi, Chan Chu Kang.

Illigera appendiculata Bl. Climber, rare, Bukit Timah.

MYRTACEÆ.

Melaleuca leucadendron L. "Gelam." Wild at Tanah Merah, near Changi. Kampong Gelam may perhaps take its name from trees formerly growing here.

Tristania Whitiana Griff. in Cantor's Plants. Journ. As. Soc. Bengal xxiii. p. 623. *T. Wightiana* Griff. Mss according to Flor. Brit. India, but Griffith named it after a clergyman of the name of White. "Pulawan." A tree 40 feet tall with red bark which flakes off and lies in piles at the foot of the tree: flowers white, fœtid. Sandy spots near the sea, Bajau, Pulau Ubin.

T. sp. flowers small white, leaves more coriaceous. Woods, Bukit Timah, Bukit Mandai.

T. Merguensis Griff. Sungei Morai.

(*T. rufescens* Pierre. A shrub much resembling *Sideroxylon ferrugineum*, apparently this Cochin Chinese plant occurs on cliffs of the island Pulau Battam, South of Singapore.)

Rhodamnia trinerva Bl. A medium-sized tree with white flowers, often as white as Hawthorn when in flower; berries red turning black. Very common all over Singapore. The var. *concolor* with leaves green on both surfaces grows in shady places; var. *spectabilis* with the backs of the leaves silvery is common in open country, but the two varieties pass into each other and are often indistinguishable.

Rhodomyrtus tomentosa Wight. "Kamunting." A bush with rosy or white flowers, fruits plum-colored, eatable. Abundant in sandy spots. Mt. Faber, Blakang Mati, Changi.

Decaspermum paniculatum Kurz. A shrub or small tree, flowers white. Common in thickets and woods. Bukit Timah, Bukit Mandai, Jurong, Chan Chu Kang.

Eugenia. This genus of trees, probably the largest one known, is a very difficult one, and the identification of many of the species in this list must be somewhat doubtful at present. All in Singapore are trees of no very great size, with white, pink or rarely green flowers. Those with large flowers and fruits are usually known as Jambu, by the Malays, those with smaller flowers, as Kelat.

(*E.* (Sect. *Jambosa*) *Malaccensis* L. "Jambu Bol." Flowers large brilliant pink, fruit large white or pink, eatable. Cultivated.)

(*E. aquea* Burm. "Jambu Ayer Mawar." Flowers white, fruit semitransparent rose or white, eaten. Cultivated).

(*E. Jambos* L. Flowers white. Cultivated).

E. densiflora De C. Flowers pink, fruit globular pinkish, not rare, Changi, Siglap, Bukit Mandai, Bukit Timah road.

E. grandis Wight. "Jambu Ayer Laut." "Krian." Common on the sea coast and planted along the roads. A big tree flowers white. Wild, at Bajau, Changi.

E. lepidocarpa Wight. "Samak Tebrau." Big tree, flowers white; bark used for tanning nets. Common on the sea coast and inland. Tanglin, Bajau, Kranji, Changi.

E. filiformis Wall. "Kelat Lapis." Small tree with small white flowers on long pedicels, common in woods. Garden Jungle, Changi, Selitar, Tanjong Gol.

E. inophylla Roxb. "Samak Paya." Chan Chu Kang.

E. pendens Duthie. Dense woods, Bukit Timah.

E. Helferi Duthie. "Singapore Lobb." Not seen; probably from Penang.

E. (*Syzygium*) *cymosa* Lam. "Kelat Merah." Small tree, flowers white. Bentley's Hill (Hullett), Changi, Teban, Pulau Tekong.

E. *myrtifolia* Roxb. River banks and near the sea. Sungei Morai, Selitar, Sungei Jurong.

E. *acuminatissima* Kurz. A big tree, flowers white, fruit purple. Garden Jungle, Jurong.

E. *claviflora* Roxb. and E. *leptantha* Wight. "Singapore and Penang, Wallich." Not seen; probably both from Penang.

E. *zeylanica* Wight. "Kelat Nasi-Nasi." Small tree, flowers and fruits white. Dry sandy spots, usually near the sea. Common, Tanglin, Changi, Toas, Kranji.

E. *chlorantha* Duthie. A very handsome tree with bright pink flowers. The name is a very unfortunate one, the petals are greenish white but very inconspicuous beside the brilliant red stamens. Cluny road, Bukit Timah, Tanjong Gol.

E. *lineata* Bl. One of our commonest trees in open country, flowers and fruits copious white. Tanglin, etc. whole island.

E. *pyrifolia* Wall. Cluny road, Changi.

E. *Thumra* Roxb. Garden Jungle.

E. *scoparia* Wall. Singapore (Wallich 2594, not identified).

E. *venulosa* Wall. Not common, Tampenis, Bukit Mandai.

E. *oblongifolia* Duthie. Garden Jungle, Chan Chu Kang.

E. *subdecussata* Wall. "Samak Pulut." Garden jungle, Changi. Toas.

E. *oblata* Roxb. Chan Chu Kang.

E. *papillosa* Duthie. Big tree with red flaky bark. Wet jungles common, Cluny road, Bukit Timah, Bukit Mandai.

E. *bracteolata*. Garden Jungle.

E. *laevicaulis* Duthie. Pulau Ubin.

E. anisosepala Duthie. Shrub near sea shore. Pulau Ubin (Hullett).

E. microcalyx Duthie. Bukit Timah.

E. Griffithii Duthie. Woods, Changi, Selitar, Garden Jungle, Bukit Timah.

E. nitida Duthie. Small tree, flowers pink. Ang Mo Kio, Bukit Mandai, Bukit Timah.

E. conglomerata Duthie. Big tree. Garden Jungle.

(*E. Jambolana* Lam. "Jiwat." Planted here and there.)
And a considerable number of undetermined species.

Barringtonia speciosa Forst. Sea coasts, Changi, Pulau Tekong, Beach road.

B. inclyta (Miers). "Putat." Sea shores, Kranji, Blakang Mati, Galang. This is certainly distinct from *B. racemosa* of the Bot. Mag. t. 3831, to which it is referred in the Flora of British India.

B. conoidea Griff. A large shrub, tidal rivers, Selitar.

B. cylindrostachya Griff. Shrub with very long racemes of pink on white flowers. Sandy woods. Toas, Changi, Pulau Tekong, Macpherson Road.

B. pendulum (Miers). Rare, Bajau.

Careya n. sp. A huge tree with large flowers, petals white, stamens white with pink bases. Leaves oblong obtuse coriaceous. Fruit like an apple with grey brown seeds and a strong coarse odour. Rare and seldom flowering. Garden Jungle.

MELASTOMACEÆ.

Melastoma polyanthum Bl. "Senduduk." Singapore Rhododendron. A very common shrub, open country everywhere.

M. molle Wall. Singapore Wallich, No. 4046; otherwise only known from the Philippines.

M. decemfidum Jack. Singapore, Wallich. (Evidently an error for Penang.)

Ochthocharis javanica Bl. Shrub with pinkish flowers. Common in mangrove swamps. Kranji, Chan Chu Kang, Jurong, Pulau Ubin.

O. borneensis Cogn. Rare, tidal rivers, Selitar.

O. paniculata Korth. Singapore, Wallich, 4083. (Not seen).

Sonerila heterophylla Herb. Dense woods, Chan Chu Kang, Bukit Timah.

S. moluccana Roxb. Dense woods, Chan Chu Kang.

S. obliqua Korth. Herb, leaves dark green spotted with white when young, flowers rosy. Rocks and dead trees in forests. Common, Bukit Timah.

Marumia rhodocarpa Jack. A climber with large handsome flowers white with a purple eye. Common, Tanglin, Jurong, Bukit Timah, Choa Chu Kang, Selitar.

Dissochæta punctulata Hook. fil. Climber. Bukit Timah, Bukit Mandai, Selitar.

D. pallida Bl. Climber, flowers rose colored. Not common, Reservoir woods, Bukit Mandai.

D. annulata Hook. fil. Woods, Bukit Timah, Bukit Mandai, Selitar.

D. gracilis Bl. Slender climber, flowers white. Bukit Mandai, Bukit Timah, Pulau Ubin.

D. celebica Bl. Common, Bukit Timah, Reservoir woods, Selitar, Chan Chu Kang.

D. intermedia Bl. Rare, Bukit Mandai.

Anplectrum glaucum Triana. A fine climber with rosy flowers. Woods. Garden jungle, Bukit Timah, Reservoir, Selitar.

A. annulata Triana. Rare, Pulau Ubin.

Medinilla Hasseltii Bl. Epiphyte with pink flowers and scarlet berries. Common in mangroves and damp woods, Kranji, Bajau, Bukit Mandai, Choa Chu Kang.

M. macrocarpa Bl. Rare, Bukit Mandai.

Medinillopsis sessiliflora Cogn. Epiphyte, with waxy pink flowers. Mangrove swamps, common, Toas, Selitar, Kranji, Sungei Buloh.

Pachycentria macrorrhiza Becc. Epiphyte with swollen stem, flowers pink. Not rare, Selitar, Sungei Morai.

P. glauca Triana. Epiphytic, forming large tufts on trees in woods. Common, Bukit Timah road, Bukit Mandai, Kranji, Sungei Buloh, Choa, Chu Kang.

These two Pachycentrias are classed by Beccari as ant-plants (Piante hospitatrici), but the ants do not live in the swollen stems as suggested by him, the swollen portions being quite solid.

Pogonanthera reflexa Bl. Epiphyte, more rarely terrestrial, usually near the sea, Kranji, Changi, Selitar, Toas, Bukit Timah.

(*Clidema hirta* Don. A coarse weed, native of South America, has established itself in Tanglin, near Fort Canning and elsewhere.)

Pternandra capitellata Jack. Tree, flowers blue, not common, Toas, Selitar.

Pt. cærulescens Jack. Common, Tanglin, Changi, Chan Chu Kang.

Pt. paniculata Benth. Rare, Chan Chu Kang.

Kibessa echinata Jack. "Sial Munahon." A common tree with pale violet fugacious flowers. Dry woods, whole island.

K. acuminata Dcne. Collected here by Walker and Maingay; not seen.

Memecylon. Trees with small blue or white flowers; a very difficult genus, as the species appear to run into each other.

M. myrsinoides Bl. Bukit Mandai.

M. pauciflorum Bl. "Singapore, Lobb." Not seen.

M. lævigatum Bl. "Dulek." Common on the coasts, Kranji, Sungei Buluh, Bukit Mandai, Pulau Tekong.

M. acuminatum Bl. Thick woods, Bajau, Bukit Timah.

M. grande Retz. A very handsome plant, with panicles of blue flowers. Selitar, Garden jungle, Serapong, Pulau Merawan.

M. heteropleurum Bl. "Nipis Kulit." Garden Jungle, Changi, Bukit Mandai.

M. amplexicaule Roxb. Rare, Chan Chu Kang.

M. sp. Garden jungle (4436).

M. sp. Bukit Timah (6788).

M. sp. Leaves very narrow. Garden jungle (5753).

M. sp. Sungei Morai (3840).

LYTHRACEÆ.

Pemphis acidula Forst. A bush with white flowers. Sea coasts, not common, Changi, Selitar.

Lagerstroemia Flos-Reginæ Retz. Given for Singapore in King's "Materials," is not wild here.

Sonneratia. Large sea-shore trees, often growing in the sea itself.

S. acida Linn. Leaves narrow, stamens red. Rare. Balestier plains, by streams.

S. alba Smith. "Berombong." Big tree, common, stamens white. Jurong, Changi.

S. Griffithii Kurz "Pedada." Toas, Changi, Jurong.

ONAGRACEÆ.

Herbs or shrubs.

Jussiæa repens L. Floating in streams with swollen pithy floats Flowers white with a yellow centre. Tanglin.

J. suffruticosa L. Shrubby, about 5 feet tall with yellow flowers. Common, Serangoon, Kallang, Thomson Road.

J. angustifolia Lam. Herbaceous, about 2 feet tall, nearly glabrous. Common in wet spots.

Ludwigia prostrata Roxb. A small herb with small yellow flowers. Common in wet spots, Tanglin, etc.

SAMYDACEÆ.

Trees or shrubs with usually very small inconspicuous flowers.

Casearia **Lobbiana* Turcz. A small shrub, not a tree as in King's "Materials," usually about 3 feet tall. Flowers minute green, capsule orange with red seeds. Common in woods all over Singapore.

C. esculenta Roxb. Woods, Sembawang, Selitar.

C. Clarkei King. Rare, Chua Chu Kang.

Osmelia Maingayi King. Tree, not rare, Bukit Timah, Kranji, Bukit Mandai, Toas.

Homalium grandiflorum Benth. Tree, rare, Kranji.

PASSIFLOREÆ.

Modecca Singaporeana Mast. Climber, flowers green, capsule red with black seeds in a white aril. Common, Tanglin, Bukit Timah, Bukit Mandai, Selitar, Pulau Tekong.

M. populifolia Bl. Less common, Bajau.

Passiflora fœtida has established itself in waste ground near Tanglin and elsewhere, as have to a smaller extent *P. suberosa*, *P. minima*, and *P. quadrangularis*.

CUCURBITACEÆ.

A good many of these are cultivated by the Chinese here, but very few are wild.

Trichosanthes. Slender climbing pumpkins with white fimbriate tubular flowers, opening about ten o'clock at night, and egg shaped crimson fruit yellow inside the flat seeds enclosed in a dark green slimy pulp. They are said to be poisonous, but are used by the natives in medicine, the pumpkin being squashed on the head to cure headache.

T. Wallichiana Wight. Very common in woods and hedges, all over Singapore.

T. Wawraei Cogn. Not rare, Tanglin.

T celebica Cogn. Leaves deep green rather stiff and shining trifoliate. The fruit much larger and cylindrical oblong. Tanglin, Choa Chu Kang.

Commonly cultivated and sometimes occurring in waste ground are *Lagenaria vulgaris* Ser. Bottlegourd ; *Luffa ægyptiaca* Mill. "Petola :" *Momordica charantia* L ; *Cucumis sativa* "Timon," cucumber : *Citrullus vulgaris* Schrad. Water melon ; *Cucurbita moschata* Duch. *C. pepo* De C. "Labu," and *Benincasa cerifera* Savi. "Kundur."

FICOIDEÆ.

Sesuvium portulacastrum L. Herb, flowers pink. Tidal mud, Changi, Tampenis road.

Mollugo stricta L. "Tapak Burong." A small weed with white flowers. Common, Tanglin, Changi.

UMBELLIFERÆ.

This order, as elsewhere in the tropics, is very scantily represented. I have doubts as to any of the species being native.

Hydrocotyle asiatica L. "Pegaga." A very variable creeping herb, much in request as a salad and as medicine, it is regularly collected and sold in the herb shops. Very common over the whole island in grassy spots.

H. rotundifolia Roxb. A very small-leaved species. Occurs in flower beds in the botanic gardens as a weed.

Eryngium fœtidum Jacq. A prickly herb with a nauseous odour. Eaten by Chinese. About villages, Changi, Choa Chu Kang, etc. A native of the West Indies.

ARALIACEÆ.

Aralidium pinnatifidum Miq. "Tinggal Balai." A shrub or small tree with lobed or entire leaves, panicles of small green flowers and large drupes, at first white, when ripe black with an unpleasant soapy taste. Common, Bukit Timah, Jurong, Kranji.

Heptapleurum avene Seem. Epiphyte usually in mangrove swamps, the lower leaves are trifoliolate, the upper ones simple. Not common, Kranji, Selitar, Pulau Ubin.

H. cephalotes Clarke. A tree. On rocks, Bajau, Kranji, Pulau Ubin.

H. subulatum Seem. Epiphyte on trees in woods, not common, Chua Chu Kang.

H. ellipticum Seem. Epiphyte. Bukit Timah, Kranji.

H. Ridleyi King * An epiphyte, or a shrub on rocks near the sea. Flowers yellow. Not rare, Kranji, Sungai Morai.

H. Hullettii King. A beautiful plant, with handsome foliage, digitate and deep green. Flowers pure white in long axilliary panicles, fruit small purple. A tree, often epiphytic at first. Woods, Chan Chu Kang and Chua Chu Kang.

Arthrophyllum diversifolium Bl. "Jolok Hantu." A tree about 20 feet tall with green flowers and black fruit, very common all over Singapore in open country.

CORNACEÆ.

Marlea nobilis C. B. Clarke. "Sutubal." Big tree. Rare, Bukit Timah.

M. ebenacea C. B. Clarke. "Lidah Kerbau" (Buffalo tongue.)

A very fine and large tree with white flowers. A good timber; the fruit is large and deep purple. Garden jungle.

M. Griffithii C. B. Clarke. Rare, Sungei Buluh.

M. sp. "Kayu Tas." Rare, Ponggol.
This tree is supposed to have remarkable powers in driving away tigers, and the Malays often wear bits of its wood to protect them from these animals.

Mastixia Junghuhniana C. B. Clarke. Garden jungle.

CAPRIFOLIACEÆ.

Viburnum sambucinum Reinwdt. A large bush with white flowers and red drupes. Rare, Road to Kranji near Bukit Mandai.

RUBIACEÆ.

Sarcocephalus Junghuhnii Miq. "Chermin Ayer." A medium sized tree with balls of small yellowish white flowers and hard brown compact heads of fruits. The timber is of fair quality and used for posts. Woods, Tanglin, Siglap, Changi, Selitar.

S. subditus Miq. Rarer, Kranji.

S. Maingayi Hav. Bukit Timah Road.

S. sp. A big tree. Chan Chu Kang (6831).

Adina rubescens Hemst. "Berambong." A tall tree with good yellow timber, remarkable for the curious natural holes or depressions in the trunk. Common Tanglin, Bukit Timah.

Uncaria. "Akar Kait-Kait." There are a number of kinds of wild gambiers, all are climbers, and often climb very high by the aid of short hook-shaped branches, whence the native name (Kait, a hook). Some attain a great size, as thick as a man's leg, and these can be safely depended on as water-vines, supplying an excellent clear water, to obtain which it is only necessary to cut the stem through at one blow of a parang, as high as can be reached and then cut through it again about three feet below, when the water will drip rapidly from the cut portion. A piece 3 feet long cut like this will give about half a pint of water. The flowers are produced in balls two inches or more through, and are usually green and reddish. The fruits are capsules, with very fine winged seeds.

U. pedicellata Roxb. "Akar Sulumbah." One of the biggest species, with very large flowers covered with white silky hairs. Common on edges of woods, etc. Tanglin, Bukit Timah, Toas, Chan Chu Kang.

U. pteropoda Miq. "Akar Kait-Kait Darat." A very large plant, with broad leaves, stem 4 or 5 inches through. Common in woods, Garden jungle, Bukit Timah, Selitar.

U. attenuata Korth. "Akar Kait-Kait Merah." A smaller plant, the leaves covered with red wool on the back. Not common, Bukit Mandai, Bukit Timah Road.

U. ovata Hook. fil. Rare, Tanglin near the Gardens.

(*U. gambir* Roxb. The gambier plant is cultivated and often persists long after cultivation has been abandoned. It is probably not a native.)

U. jasminiflora Wall. Flowers greenish white. Not common, Dalvey Road, Jurong, Selitar.

U. glabrata De C. Not very common. Bukit Timah, Bukit Mandai, Pulau Ubin.

U. ferrea De C. Chan Chu Kang, Chua Chu Kang.

U. Roxburghiana Korth. Chua Chu Kang, Bukit Mandai.

U. dasyoneura Korth. was said to have been collected here by Lobb. Probably an error for Penang.

Coptosapelta flavescens Korth. A climber with sweet greenish white flowers. Rare, Chua Chu Kang.

Dentella repens Forst. "Bunga Karang." A little creeping weed with white flowers. Common in waste ground, Tanglin, Galang, etc.

Argostemma parvifolium Benn. *A. elatostemma* Hook, and *A. spinulosum* C. B. C., collected by Lobb and labelled Singapore, were doubtless mislabelled. The *Argostemmas* are all hill plants.

Hedyotis capitellata Wall. A climbing plant with greenish heads of flowers. Common in thickets, Bukit Timah, Chan Chu Kang, Bukit Mandai, Chua Chu Kang.

H. vestita Br. "Tokong Bulu." A rough branching herb with whorls of lilac flowers. Waste ground, Bukit Panjang, Changi.

H. auricularia L. Somewhat resembling the last, but less hairy, and with white flowers. Common, Tanglin, Chan Chu Kang, Toas.

H. pinifolia Wall. A common weed in sandy spots with narrow linear leaves and white flowers. Changi, Teluk Kurau, var. *coespitosa.* A much more tufted form, grows in the same places.

H. congesta Br. "Rumput Lidah Jin." A stiff erect coarse herb with white flowers, common in woods, Tanglin, Bukit Timah, Jurong, Blakang Mati.

Oldenlandia corymbosa L. A common little annual weed in waste ground with white flowers. Very variable, the variety *alsinifolia* is as common as any form. Tanglin, Changi, etc.

O. diffusa L. Common in sandy spots. Tanglin, Changi, Jurong.

O. Heynei Br. Tanglin in grass plots.

O. trinervia Retz Sandy places, Galang, Tanglin.

O. dichotoma Retz? Flowers violet. Teluk Kurau.

Ophiorrhiza Harrisiana Heyne. var. A small herb with white flowers. It differs from the type in being very much more pubescent, and having pubescent capsules, and is perhaps a distinct species. Damp rocks in jungles. Common, Chan Chu Kang, Bukit Timah, Bukit Mandai, Chua Chu Kang, Pulau Ubin, Jurong.

Mussaenda glabra Vahl. "Balik Adap." A common and conspicuous shrub with orange or yellow flowers, and one lobe of the calyx developed into a large white leaf-like limb. Very variable. In the typical form the leaves are narrow lanceolate and glabrous in another they are ovate and pubescent. In the var. *setulosa* broad and rounded with bristles on the midrib above and pubescent beneath. Common all over Singapore.

M. variabilis Hemsl. A half scandent shrub with large star-like flowers, at first scarlet, then orange. Common in the peninsula, rare in Singapore. Selitar.

Lucinea morinda De C. Local in deep wet jungle. Bukit Mandai, Chan Chu Kang.

Adenosacme longifolia Wall. A slender shrub about 3 feet tall with small flowers, and translucent white berries. Damp rocky ravines. Bukit Timah.

Urophyllum. Slender shrubs, rarely small trees, with very small white flowers in axillary clusters and yellow or orange berries.

U. Griffithianum Wt. Common in woods, Changi, Bukit Timah, Bukit Mandai, Sungei Buluh.

U. glabrum Bl. Very common, Bukit Timah, Chan Chu Kang, Garden jungle,

U. streptopodium Wall. Common, Garden jungle, Bukit Mandai, Pulau Ubin.

U. hirsutum Wt. Common, Kranji, Toas, Selitar.

U. villosum Wall. "Singapore Lobb," probably an error for Penang.

Lecananthus erubescens Jack. "Achar Achar." A scrambling epiphyte in swampy jungle. Flowers small white with purple bracts in heads. Chua Chu Kang, Jurong, Selitar.

Webera fragrans Bl. "Jarum Jarum." Shrub with greenish white sweet flowers. Kranji, Bukit Timah, Tanglin, Bukit Panjang.

W. mollis Wall. Small tree, Garden jungle, Bukit Mandai, Selitar.

W. grandifolia Hook. f. A shrub with greenish white flowers. Changi, Bukit Mandai, North Selitar, Bukit Timah.

W. sp. Shrub with white flowers. Tampenis (5961), Sungei Brih.

W. sp. Chan Chu Kang (6147).

Gardeniopsis longifolia Miq. This curious shrub grows in woods. The flowers are seldom produced, they are fairly large and white tinted with rose. Miquel's description of the plant, as obtained by him in Sumatra, fits the peninsular species very well. Bukit Timah.

Randia fasciculata De C. A thorny shrub, common near the sea, Changi, Pasir Panjang, Balestier plain, Teluk Kurau.

R. longiflora Lam. A strong spiny climber with large white flowers. Not common. Garden jungle, Bukit Timah.

R. angulosa, *Canthium angulosum* Wall. A strong spiny climber like the last, but with much smaller flowers in dense heads. It is indeed referred to that species as a variety in the Flora of British India, but seems to me utterly different. Rare, Garden jungle.

R. densiflora Benth. "Merumbong jantan." A fairly big tree with a good timber, flowers small white, berries orange. Common on some spots, Changi, Selitar.

R. anisophylla Jack. "Simpoh." A medium sized tree with small white flowers, and oblong green fruits, woody, containing many flat seeds in a sweet black pulp, eaten by monkeys, but said to be poisonous by the Malays. Common in woods, and secondary jungle all over Singapore.

R. macrophylla Br. ' Delima hutan." A small shrub with large white trumpet-shaped flowers 4 inches across, white with dark purple spots in the mouth. A most beautiful plant. Common, Garden jungle, Changi, Bukit Timah, etc.

Gardenia tubifera Wall. A shrub or large tree with large sweet-scented flowers opening nearly white and becoming orange very quickly. Dense woods and river banks, not very common here. Garden jungle, Changi, the Reservoir.

G. Griffithii Hook. fil. A slender straight tree, with much larger flowers than the last and very large globose fruit. Local, damp thick woods. Bukit Timah, Selitar, Sungei Buluh, Bukit Mandai.

G. speciosa Hook.* "Singapore, Lobb," I have not seen. This fine gardenia has only been collected by Lobb and never met with again.

Petunga venulosa Hook var. (?) Small tree, possibly a distinct species. Garden jungle.

Scyphiphora hydrophyllacea Gaertn. "Chingum." A very common sea shore shrub, with small white flowers. The seeds may often be seen thrown up on the sea shore in great quantities. Along the coast with mangroves.

Jackia ornata Wall. A tall slender tree about 20 feet tall, with drooping panicles of rosy white flowers, and red fruits, very beautiful. Common in open swamps and wet borders of woods. Dalvey road, Bukit Timah, Changi, Selitar.

Guettarda speciosa L. A common small or medium sea-coast tree, flowers white, Changi, Selitar.

Timonius Jambosella Thw. A very common tree 12 to 20 feet tall, with small yellow flowers. Secondary jungle everywhere.

T. Rumphii De C. "Tulang-Tulang Paya." Common in secondary jungle, whole island.

T. Finlaysonianus Wall. A sea-shore plant, flowers white. Tidal rivers, Serangoon, Changi.

Canthium didymum Roxb. "Mata Keli jantan." Tidal rivers and other places near the sea. Common, Kranji, Selitar, Pulau Tekong.

C. glabrum Bl. A tall tree, 20 feet high, with small greenish white flowers and large grey-green plum-shaped fruits containing two 3-sided stones. Woods, Garden road, Toas.

C. confertum Korth. Garden jungle (4124), Selitar, Pulau Tekong.

C. sp. "Gading." The white wood, suggesting ivory, gives it its native name, the leaves are used for making a kind of tea. Not rare, Tanglin, Thomson Road, Selitar, Jurong (6506).

C. horridum Korth. "Bulangan Tikus." A small thorny shrub, with small green flowers and plum-like yellow fruits. Common especially near the coast in dry spots. Tyersall, Tanjong Katong, Bukit Timah, Changi, etc.

C. scandens Bl. "Akar Kuku Baning," lit. tortoise-claws. A thorny climber with pubescent leaves, green flowers and black fruits. Thick Woods, Garden jungle.

Ixora pendula Jack. A pretty shrub about 4 feet tall with clusters of slender flowers white with a pink tube on long hanging peduncles. Fruit small elliptic dark purple. Common in thick woods. Garden jungle, Changi, Chan Chu Kang, Bukit Timah.

I. opaca Br. Woods. Changi, Bukit Timah.

I. fulgens Roxb. "Bunga Pechah Priok," lit. the broken pot, the red spreading corolla lobes supposed to resemble a broken earthenware pot. One of the showiest native plants, the splendid orange red trusses of flowers being most conspicuous. Common in woods, Tanglin, Bukit Timah, Changi, Pulau Tekong, etc.

I. congesta Roxb. A similar plant with broader leaves and shorter flowers. Common, Changi, Chan Chu Kang, Pulau Ubin, Garden jungle.

I. concinna Br. A shrub or small tree, flowers red or yellow. Rather rare, Chan Chu Kang, Chua Chu Kang.

I. parviflora Vahl. A tree with small yellow flowers. Rare, Chan Chu Kang.

I. amœna Wall. Shrub with orange red flowers not common, Serembun, Chua Chu Kang.

Pavetta indica L. "Jarum-Jarum." A large bush with greenish white flowers, Kranji, Bukit Timah, Chan Chu Kang.

Morinda citrifolia L. "Mengkudu." A small rarely large tree with white flowers, and large pulpy semitransparent heads of fruits. The bark of the root is used for dyeing and tanning nets, also in native medicine. The fruit is used as soap and eaten. It is very doubtfully wild, though it is very common in waste ground.

M. tinctoria Roxb. "Mengkudu Hutan." A smaller shrubby plant with narrower leaves possibly the wild form of the preceding. Common everywhere in secondary jungle.

M. persicæfolia Ham. Singapore (Maingay); not seen.

M. umbellata L. Climbing or erect shrub, heads of fruit small orange. Very abundant in open country near the sea. Changi, Pulau Ubin.

M. sp. A tall climber with slender stems pubescent leaves and small orange heads of fruits. Garden jungle.

M. sp. "Sulong Akar Darat." A scandent shrub with thick leaves pubescent at the back, flowers few in a head white with a long tube and pubescent mouth, very fragrant. Borders of woods, Changi, Pulau Ubin, Pulau Tekong.

Prismatomeris albidiflora Thw. A pretty shrub with white flowers. Open places near the coasts, also in swampy woods. Changi, Bajau, Selitar, near the Bungalow.

Gynochthodes sublanceolata Miq. A climber with white flowers and curious lead-grey fruits. Common near the sea, rarer inland, Changi, Tanglin.

G. coriacea Miq. A much larger broader leaved plant. Not common, Changi, Garden jungle.

Psychotria. A large group of shrubs or climbers with white or green flowers, and black orange or white berries.

Shrubs. Berries orange or black.

P. stipulacea Wall. Not common, Bukit Timah.

P. angulata Korth. Changi, Garden jungle.

P. Helferiana Kurz. Common, Garden jungle, Jurong, Selitar. Kranji, etc.

P. Malayana Jack. Fruit black. Bukit Timah (6468), Bukit Mandai, Pulau Ubin.

P. Griffithii Hook. fil. Bukit Timah, Pulau Ubin.

P. montana var. *tabacifolia* Wall. Singapore, Wallich 8334. (Not seen.)

Climbers, berries white or green.

P. polycarpa Miq. "Akar Chinta Mula." Common in hedges, Garden jungle, Changi, Kranji, etc.

P. sarmentosa Bl. Common, woods, Serangoon, Changi, Bukit Mandai, Selitar.

P. Maingayi Hook. fil. Woods, Selitar, Bajau.

P. morindæflora Wall. Rather common, Sungei Buluh, Bukit Mandai, Chan Chu Kang.

P. ovoidea Wall. Common, woods, Garden jungle, Jurong, Bukit Timah.

P. sp. with grey green fruits and large leaves. Reservoir woods.

P. sp. leaves lanceolate, flowers green, Kranji, Ang Mo Kio.

Chasalia curviflora Thw. "Pechah Piring putih." A very common and variable small shrub or herb, flowers white on purple stalks, berries black on thickened white stalks. Woods, everywhere, Garden jungle, Bukit Timah, etc.

C. rostrata Miq. Garden jungle, Bukit Timah.

Geophila hirta Miq. Creeping plant with white flowers, local. Reservoir woods, Bukit Timah.

Cephaelis Griffithii Hook. A small shrub with yellow honey-scented flowers in an involucrate head; berries light blue. Sandy woods, Toas, Bajau; also Garden jungle.

Lasianthus, small shrubs with axillary whorls of white flowers and blue or white berries.

L. cyanocarpus Jack. Sea coasts, Pasir Panjang, Changi, Pulau Ubin, Pulau Tekong.

L. appressus Hook. fil. Garden jungle, Bukit Timah, Chan Chu Kang.

L. pterospermus Wt. Rare, Chan Chu Kang (6711).

L. densifolius Miq. Common, Garden jungle, Changi, Bukit Timah, Seltar.

L. Griffithii Wt. Common, Bukit Timah, Chan Chu Kang, Sungei Blukang.

L. stipularis Bl. Bukit Timah (4903).

L. ellipticus Wt. Garden jungle, Bukit Timah, Chan Chu Kang.

L. crinitus Hook. fil. Garden jungle, Bukit Mandai, Pasir Panjang.

L. Maingayi Hook. fil. Singapore (Hullett 628.) and several other unidentified species.

Saprosma sp. Rare, Bukit Mandai.

Hydnophytum formicarium Jack. The ant plant. "Kapala Beruk." one of our most curious plants, epiphytic with a large swollen tuberous stem containing passages always full of ants, flowers small white, fruits orange juicy. Common Tanglin, Selitar, Sungei Morai, etc.

Myrmecodia echinata Jack. Much resembles the last, but is covered with spines. Rarer, Bukit Timah, Jurong.

Poederia foetida L. "Akar Sekuntut." A slender climber with panicles of violet and white flowers. The whole plant has an unpleasant odor. Not common, Chan Chu Kang, Bukit Timah.

P. tomentosa Bl. Singapore (Fl. Brit. Ind.) ; not seen.

Spermacoce hispida L. A common weed with pink flowers. Paths and waste ground, Tanglin, Changi, Selitar, etc.

S. scaberrima Bl. A rough scrambling herb, flowers white. Waste ground, Chasseriau estate.

S. ocymoides Burm. A prostrate herb, flowers white. Roadsides, Choa Chu Kang, Passir Panjang, Gardens.

COMPOSITÆ.

This large order is represented here by four or five native plants and a number of weeds introduced, but now established in waste ground and such places.

Vernonia arborea Ham. "Merambong." A large tree with lavender colored flowers. There are two forms of it, one a tall straight tree 50 feet high with perfectly glabrous leaves, Cluny Road, etc., and one more stunted and gnarled with pubescent leaves, Changi, Chan Chu Kang, Jurong, Chua Chu Kang.

V. cinerea Less. A common little weed with purple flowers, grows everywhere.

V. chinensis L. "Ruku Gajah." A larger rough herb, flowers purple. Common in villages, Chan Chu Kang, Tanglin, Bukit Mandai.

V. scandens De C. "Tombak-Tombak." A climber in thickets, flowers yellow. Tanglin, Bukit Timah, Selitar, Changi.

Elephantopus scaber L. "Tutup bumi." A very common weed flowers pink. Whole island.

Adenostemma viscosum Forst. A coarse herb with white flowers, waste ground near houses, Chan Chu Kang, Pulau Ubin, Bukit Panjang.

Ageratum conyzoides L. An exceedingly common weed with blue or white flowers, everywhere.

Mikania scandens Willd. "Akar Churoma." A climber with hanging heads of flowers. Thickets, not common, Jurong, Woodsville.

Erigeron linifolius Willd "Sumbong Jantan." A large coarse weed. Waste ground, Tanglin, Selitar, etc.

Blumea lacera De C. An erect herb with yellow flowers. Common waste ground and grassy places. Tanglin, Selitar, etc.

Bl. membranacea De C. Alexandra Road.

Bl. balsamifera De C. Ngai Camphor. "Sumbong." A tall herb about 8 feet high or less, with yellow flowers. The whole plant has a strong camphor smell, and is used in medicine by the natives. Very common in open ground, Tanglin, Bedoh, etc.

Pluchea indica Less "Poko Beluntas." A sea-shore shrub with lilac flowers. Very common on the sea coast, Changi, Galang, etc.; rarer inland, Tanglin, near the rifle range,

Sphoeranthus africanus L. A herb with heads of white flowers. Ditches, Galang.

Cæsulia axillaris Roxb. Ditches, Tanglin and Galang.

Eclipta alba Hassk. Common weed in waste ground, flowers white.

Centipeda orbicularis Lour. A very small prostrate weed with minute purple flowers. Paths in the Botanic gardens.

Wedelia biflora De C. "Serenai Laut," Sea-shore herb with yellow flowers. Common, Galang, Kranji, Changi.

Spilanthes acmella L. "K'rabo." The toothache plant, a common weed with conical heads of yellow flowers very pungent. Sold in the native herb shops. Open country, Sungei Morai, Ang Mo Kio.

Synedrella nodiflora Gaertn. Stiff weed with yellow flowers. Very common everywhere.

Tridax procumbens L. Sandy places, Tanjong Katong, Cathedral Close, Changi, Teluk Kurau.

Artemisia vulgaris L. Often cultivated for medicine in Chinese villages.

Gynura sarmentosa De C. "Akar Subiak." Climbing herb with glaucous green leaves, and yellow flowers in a purple involucre. Swampy spots in dense jungle, Bukit Mandai, Bukit Timah, Tanglin.

G. pseudochina De C. A coarse common weed, Tanglin, Tanjong Katong, Selitar, etc.

Emilia sonchifolia De C. "Katumbi jantan." Common herb with bright pink flowers, waste ground.

(*Cosmos bipinnatus*. Often cultivated as a vegetable.)

Acanthospermum xanthioides De C. Prostrate herb with white flowers and burr-like fruit. Not common, Pasir, Panjang, Ang Mo Kio, Tanglin.

GOODENOVIEÆ.

Scœvola Koenigii Vahl. "Ambong-ambong." A common sea-shore shrub. Flowers and fruit white. All round the coasts. Changi, Selitar, Pulau Ubin, Blakang Mati.

CAMPANULACEÆ.

Pratia begonifolia Lindl. Small creeping herb with blue and white flowers. Wet spots by streams, Bukit Timah, Choa Chu Kang.

Pentaphragma begoniæfolium Wall. "Balong Ayam Batu." (Rock Cock's comb), a very curious herb with scorpioid spikes of creamy yellow flowers with purple spots inside. Banks in woods, common, Bukit Timah, Sungei Morai, Changi, Chua Chu Kang.

VACCINIACEÆ.

Vaccinium malaccense Wt. "Kalumpadang." A large bush with pink or white fragrant flowers and eatable black fruits. Sandy places at Changi, abundant.

V. bancanum Miq. Epiphytic or terrestrial. A bush or small tree, leaves often red stiff, flowers waxy pink red or white. Sea coast, Toas, Changi, Sungei Morai, on high trees, Bukit Timah.

V. acuminatissimum Miq. Rare, Bukit Mandai.

ERICACEÆ.

Rhododendron lampongum Miq: *R. javanicum* var. *tubiflorum*, Bot. Mag. t 9840. A beautiful epiphytic shrub on the tops of lofty trees. Bukit Timah, very rare. Flowers bright red.

EPACRIDEÆ.

Leucopogon malayanus Jack. Shrub with small white flowers and red fruit. Sea shore, Changi.

PLUMBAGINEÆ.

Plumbago zeylanica L. "Cheraka." Waste ground near villages, Galang, etc.

MYRSINEÆ.

Mæsa indica L. A large shrub or small tree with very small white flowers. Common in woods, Bukit Timah, Reservoir woods, etc.

M. ramentacea De C. A half climbing shrub with narrower leaves, but otherwise much like the last. The branches often bear moss-like masses of abortive branchlets, which are much more elegant than the very insignificant flowers. One of the commonest shrubs in jungles and secondary forest, everywhere.

Myrsine capitellata Wall. A small tree, with small white flowers and fruits. Sea coasts, not common, Changi, Bajau.

Embelia Ribes Burm. Very common in woods and thickets, Tanglin, Bukit Timah, etc.

Var. *garciniæfolia.* A distinct looking plant with much more coriaceous leaves. Rarer, Changi, Reservoir woods, Bukit Timah.

E. coriacea A. De C. Thick jungles, Selitar, Bukit Mandai.

E Limpanii Scheff. Hedges, not common, Changi, Bukit Timah.

E amentacea Clarke. Hedges, Bukit Timah Road, Bukit Mandai,

E. lucida Wall.* Cat 2315. Singapore. I have not met with it.

Labisia pothoina Lindl. "Akar Fatimah." A little shrub with small pink flowers, and scarlet fruit, leaves of young plants crenulate deep green edged with pink, when older lanceolate with long petioles (var. *lanceolata*) or the petiole winged the whole length, (*pothoina* proper). Common in dense woods.

Ardisia. Shrubs, rarely small trees, with or rose pink flowers, often showy, and red or black berries.

A. crassa Clarke. Rare, Chan Chu Kang (3844).

A lanceolata Roxb. Very handsome shrub. Selitar, Bukit Timah.

A. colorata Roxb. Flowers very small, pale pink. Common, Bukit Timah, Garden jungle, Changi Road.

A. tuberculata Wall. Common, Bukit Timah, Selitar, Sungei Morai.

A. crenata Roxb. "Mata Pelandok." Common, Alexander Road, Changi, etc.

A. villosa Roxb. Rare, dense woods, Pulau Ubin.

A. odontophylla var Lobbii. Singapore, Lobb; probably an error of locality.

A. sp. near *Bhotanica* Clarke. Rare, Ang Mo Kio (6434).

A. sp. near *villosa.* Rare, Pulau Ubin (2816), Changi.

A. humilis Vahl. One of the largest species, flowers rose pink, berries black. Tidal mud, and damp spots. Common, Galang, Holland Road, Tanjong Katong, Changi, etc.

Pimelandra Wallichii De C. A small tree, flowers pinkish white, berries white with black spots. Common, Tanglin, Changi, Sembawang.

Aegiceras majus Gaertn. Mangroves local, Toas, Sungei Morai, Pulau Ubin.

SAPOTACEÆ.

A group of trees, of which many produce gutta percha or Caoutchouc. There are a considerable number here, but they are difficult to collect on account of their great size, and are not easy to identify.

Chrysophyllum Roxburghii G. Don. A tall tree with small dark green leaves and yellow flowers, fruit globose 5-angled yellow ½ an inch long, sweet and eatable but full of rubber. Not rare, Tanglin, Bukit Timah.

Sideroxylon ferrugineum Hook. Small tree or shrub. Common along the coast, Serangoon, Kranji, Changi, Pulau Damar.

S. Maingayi Clarke. Big tree. Garden jungle.

S. Malaccense Clarke. Very large tree. Tanglin, Garden jungle, Selitar.

Dichopsis bancana Miq. Vast tree, flowers and fruit green. Garden jungle.

D. obovata Clarke. A big tree producing a gutta inferior only to that of *D. Gutta*. Tanglin, Changi.

D. Gutta Benth. A large tree, easily known by the beautiful golden underside of the leaves. Though it was formerly very abundant in Singapore, nearly all the larger trees have been cut for the gutta percha. Flowers small white, very rarely produced. *D. oblongifolia* is I think specifically undistinguishable, merely a variety. It is the commonest form now in Singapore. Dense jungle, widely scattered over Singapore. Garden jungle, Bukit Timah, Selitar, Pulau Damar.

D. rubens Clarke. Rare, Changi, Chan Chu Kang.

Bassia Mottleyana De Vr. A big tree, Selitar, Jurong, Kranji, Bukit Mandai.

B. cuneata Bl. Rare, Bukit Timah.

B. Kingii Stapf. Bukit Timah.

B. Malaccensis (*Payena Malaccensis* Clarke). Common, Garden jungle, Changi, Bukit Timah, Selitar.

Payena costata King. "Niato." Common, a medium sized tree. Garden jungle, Selitar, Reservoir woods.

P. Maingayi Clarke. "Getah Percha Burong." Rare, Sungei Morai (6497).

P. Leerii Benth. "Getah Sundik." Bukit Timah, Bajau.

Mimusops hexandra Roxb. "Niato hitam." Rare, Tanjong Gol.

(*M. Elengi* L. "Poko Tanjong." Commonly planted, but doubtfully wild.)

EBENACEÆ.

Maba buxifolia Pers. Small tree. Rare, Tampinis.

Diospyros microphylla Bedd. Large tree, produces ebony. Garden Road, Bukit Timah.

D. lucida Wall. "Kayu Arang." Woods, usually near the sea, not rare. Bukit Timah, Bukit Mandai, Changi, Loyang, Bajau, Tampenis, Sungei Morai.

D. bilocularis Oliv. *Maba Maingayi* Hiern. Tree. Garden jungle.

D. sapotoides Kurz. Very large tree, Bukit Timah, Chan Chu Kang.

D. oblonga Wall. Garden jungle, Bukit Timah, Tanjong Gol.

D. clavigera Clarke. Produces ebony. Sungei Morai.

D. argentea Griff. "Bedil Lalat." "Mulatope Lalat." A small tree with large leaves coated beneath with golden yellow fur. Fruit large, covered with red hair. The dried leaves when burnt crackle, and this is supposed to drive away mosquitoes, hence the native name "Fly-cracker." Not rare. Dense jungle, Bukit Timah, Changi, Chan Chu Kang.

D. sp. with large coriaceous leaves, and cream colored flowers on the stem, fruit pearshaped. Bukit Timah.

STYRACEÆ.

Symplocos, small or medium trees with white flowers and blue or green fruit.

S. spicata Roxb. Rare, Bukit Mandai.

S. fasciculata Zoll. Flowers white in small nearly sessile cymes drupes blue. Very common, woods and secondary jungle. Tanglin, Bukit Timah, Selitar, etc.

S. adenophylla Wall. Common in woods, especially near the sea. Changi, Jurong, Kranji, Toas, Pulau Tekong.

S. celastrifolia Griff. Rare, Jurong River (8423).

S. rubiginosa Wall. Not very common, Chan Chu Kang, Bukit Timah.

S. rigida Clarke. A big tree. Rare, Changi.

S. sp. "Donoon." A medium sized tree, flowers in compact cymes. Rare, Kranji.

Styrax Benzoin Dryand. Gum benjamin. "Kemeniyan." A tall tree with sweet white flowers, and hard grey round flattened fruits. Produces the gum benjamin of commerce, which is obtained by cutting gashes in the bark, when the gum, after some weeks, exudes. Common in jungle, Garden jungle, Bukit Timah, Selitar, Choa Chu Kang.

S. crotonoides Clarke. Singapore (Wallich No. 7848); also in Cantley's collection. I have never seen it here.

OLEACEÆ.

Jasminum bifarium Wall. "Melor hutan." Wild Jasmine, very common in open country, and hedges, Tanglin, Balestier plain, Changi, etc.

J. Griffithii Clarke. "Kuma-Kuma hutan." A very hairy jasmine. Rare, woods, Garden jungle, Bidadari, Chan Chu Kang.

Olea maritima Wall. A large bush with small green flowers and black drupes. Sea coasts in dry spots, Tanjong Katong, Changi, Pulau Ubin.

Linociera pauciflora var. *palembanica.* A big tree with small white flowers. Common, Bukit Mandai, Bukit Timah, Changi.

APOCYNACEÆ.

Willughbeia firma Bl. "Getah Grip or Gegrip." A large woody climber with rough black bark, white flowers and green or orange oblong or globose fruits. Seeds deep violet inside. It abounds in rubber, and is the best of all the local rubber vines. The fruit is eatable and sweet, but full of rubber milk. Common, Garden jungle, Bukit Timah, Changi, etc.

W. coriacea Wall. "Getah Ujol." An inferior Gutta, which does not set readily, it is used for adulterating and for bird lime. Common, Tanglin, Bajau, Changi, Blakang Mati, Bukit Timah.

W. flavescens Dyer. Flowers short yellowish white, fruit globose orange, containing 2 to 7 seeds. Garden jungle, Pulau Ubin.

W. tenuiflora Hook. fil. Changi.

W. sp. near *flavescens*, with very small flowers. Corolla tube short and globose, lobes long. Changi (6023), Chan Chu Kang, Jurong.

W. grandiflora Dyer. Flowers larger than any other species 1½ inch long. I take this to be the plant intended for *W. grandiflora*, but note that the leaves are not thickly coriaceous, nor rounded at the tip as described. The mouth of the corolla tube is hairy. Rare. Reservoir woods.

Leuconotis Griffithii Hook. fil. "Akar Getah Sundek." A climber, but less thick than *Willughbeia* (not erect as stated in Fl. Brit. Ind.). Flowers orange fruit globular rather small. Not rare. Borders of woods, Jurong, Bukit Mandai, Selitar, Bukit Timah.

L. Maingayi Dyer. Singapore (Maingay); not seen here.

Melodinus orientalis Bl. Climber, rare, Changi.

M. micrantha Hook. fil. Jalan Bray.

Alyxia lucida Wall. "Pulasari." Bark strongly scented as of new mown hay. Climber, flowers white fragrant. Bukit Mandai, Jurong, Kranji, Sungei Morai.

Cerbera lactaria Ham. "Buta-Buta." A large tree with white flowers and a pink eye and large ovoid reddish fruits. The white milk with which the tree abounds is poisonous and said to cause blindness if it falls into the eye. Very common in tidal rivers and swamps. Balestier plain, Selitar, Tampenis.

C. odollam Gaertn. Kranji, Changi.

Kopsia macrophylla Hook. fil. Shrub about 15 feet tall, flowers white with pink ring in centre. Chan Chu Kang.

(*Vinca rosea* L. has established itself in many places near the sea, and *Allamanda Schottii* Pohl. has run wild in a few places.)

Alstonia scholaris Br. "Pulai." A tall tree, flowers green, branches in distant whorls. Common, Tanglin, Reservoir woods.

A. spathulata Bl. Jungle swamps, Cluny Road, Bukit Mandai.

A. angustifolia Wall. "Buta Buta Darat." Common woods, Bukit Timah, Changi, Kranji, Sungei Morai.

A. grandifolia Miquel. Singapore (Anderson); doubtful.

Dyera laxiflora Hook. fil. "Jelutong." A big tree with grey smooth bark, flowers small white. Pods very large and woody. Seeds thin flattened winged. Produces an inferior rubber. Common all over Singapore. Tanglin, Changi, etc.

Tabernaemontana corymbosa Roxb. "Jelutong Badak." A small tree with white flowers fragrant. Not very common, Changi, Reservoir woods, Choa Chu Kang.

T. hirta Hook. fil. Chan Chu Kang, Jurong.

T. Malaccensis Hook. fil. "Lada Lada jantan." A shrub with small white flowers and orange pods containing several seeds wrapped in crimson arils. Common in woods. Garden jungle, Changi, etc.

(*T. coronaria* Roxb. "Bunga susu." Is often cultivated and half wild near villages.)

Parsonsia spiralis Wall. Climber with greenish yellow flowers. Mangrove swamps. Not rare, Changi, Tampenis, Selitar, Toas, Sungei Morai.

Vallaris Maingayi Hook. fil. A large tree with deep green leaves and large white flowers. Pods long and slender containing many long-plumed seeds. Not common, Garden jungle.

Strophanthus dichotomus De C. "Bunga Hantu." A big shrub with large white flowers, with long claret-colored tails to the petals. Open country, Changi, Alexandra road.

S. brevicaudatus Wt. Smaller shrub with small deep purple flowers. Tanglin, Holland road, Balestier plain.

Urceola Malaccensis Hook. fil. "Getah grip tembaga." A climber flowers very small white. Produces a fairly good rubber. Thickets, Tyersall, Changi, Bedoh.

U. Maingayi Hook. fil. Rare, Kranji.

U. brachysepala Hook. fil. Bukit Mandai, Bukit Timah.

U. torulosa Hook. f. Jungles, common, Tampenis, Changi, Chan-Chu Kang.

U. lucida Benth. Changi, Pulau Ubin.

Parameria polyneura Benth. Climber with pink flowers, Garden jungle, Cluny Road.

P. glandulifera Benth. "Singapore Lobb"; not seen.

Aganosma marginata Don. Singapore, (Fl. Brit. Ind.); not seen wild.

ASCLEPIADEÆ.

Streptocaulon Wallichii Wight. Singapore, Wallich in Fl. Brit. Ind.; but Wallich's No. 8249 is in the Catalogue "Penang et Singapore;" doubtless from Penang only, where it is common.

Toxocarpus Griffithii Don. "Singapore, Lobb"; certainly an error of locality.

Genianthus Maingayii Hook. fil. Very rare, Bukit Timah, (Cantley).

(*Calotropis procera* Br. Escape from cultivation, Toas, Changi, Pulau Ubin).

(*Asclepias curassavica* L. has established itself at Selitar, etc.)

(*Raphistemma pulchellum* Wall. Garden road ; escape.)

Sarcolobus globosus Wall. Climber, flowers small yellow with brown streaks. Tidal river banks, not rare, Balestier plain, Alexandra road, Kalang Puding, Changi, Selitar river.

Stephanotis Maingayi Hook. fil. A splendid white flowered climber, flowers bigger than the garden Stephanotis. Very rare, Changi (Hullett), once collected.

Tylophora tenuis Wall. Slender climber, flowers pink. Hedges Blakang Mati, Green Hill, Alexandra road.

T. Wallichii Hook. fil. "Singapore, Wallich" in Fl. Brit. Ind., but No. 8194 B. in Wallich's catalogue is labelled Habit ignot.

Cynanchum ovalifolium var. Bamboo Hedges, Cluny road, Balestier plain, Bukit Timah Road.

Dischidia nummularia Br. An exceedingly common creeping epiphyte draping orchard trees, and doing much damage. Stems very slender, leaves small and fleshy flowers white (scarlet as in Fl. Brit. Ind.). Whole island.

D. hirsuta Decne. Flowers red. Common in woods, Selitar, Chan Chu Kang, Kranji.

D. albida Griff. Flowers creamy white. Rare, Bajau.

D. benghalensis Colebr. A long creeping epiphyte, glaucous green often nearly leafless. Flowers creamy white, woods near the sea. Kranji, Sungei Buloh, Bajau.

D. Rafflesiana Wall. A very curious plant with some leaves developed into pitchers, green or often yellow, inside purple, flowers yellow. Common on trees especially near the sea. Tanglin, Blakang Mati, Teluk Kurau.

D. collyris Wall. A slender creeper on trees, leaves rounded buff yellow, above purple beneath, lying flat on the trees.

Flowers white. Ants often make their nests between the leaves and the branches of the trees. Common, Tanglin, Chan Chu Kang, Bukit Timah, Kranji.

D. coccinea Griff. Flowers scarlet. On lofty trees, Bukit Timah, Selitar, Choa Chu Kang. Very distinct from the last, of which Maingay suggested it was a variety.

D. Wallichii Wt. Wall. Cat. 8183. Is apparently a *Ficus*.

Hoya lacunosa Bl. Flowers white. Not rare, Tanglin, Selitar, Bukit Mandai.

H. revoluta Wt. Singapore, Wallich 8160 B; not identified.

H. latifolia Don. A very large-leaved species, leaves often dull red, flowers small pink. The commonest species. Trees in dense jungle. Garden jungle, Kranji, Selitar, Pongol, Changi, Pulau Tekong.

H. parasitica Wall. Common near the sea, very floriferous, and pretty, flowers pink. Blakang Mati, Changi, Chan Chu Kang, Toas, Pulau Jahat.

H. coronaria Bl. The largest flowered species. Flowers star-like and waxy opening white, with a yellow tint, then becoming spotted with pink and finally altogether pink. Common especially near the sea. Serangoon, Changi, Kranji, Pulau Tekong, etc.

H. diversifolia Bl. A pretty pink flowered species, often covering trees like a mat. Jurong, Chan Chu Kang, Kranji. Serangoon.

H. coriacea Bl. Flowers yellowish white. Rare, Tampenis (D'Almeida).

H. obtusifolia Wt. A very stout kind with thick oblong leaves. Flowers white with a pink centre, large, rarely produced. Serangoon, Changi.

H. Finlaysonii Wall. Cat 8166. Leaves only, not identified.

Physostelma Wallichii Wt. "Akar Siak." Slender climber with large thin creamy white flowers with a purple centre.

Roots scented like new mown hay. Rare, Tampenis river, Kranji, Toas.

Leptadenia reticulata Wt. "Singapore, Lobb;" evidently wrongly localised.

Loganiaceæ.

Fagraea carnosa Jack (?) Epiphyte, Bukit Timah. Rare. Perhaps a new species, leaves large ovoid, flowers with a long tube in pairs.

F. auriculata Jack. A large spreading shrub, with enormous thick white trumpet-shaped flowers. The capsule is very large greyish green conic, splitting when ripe and showing the minute black seed in orange pulp. There are two forms: one has the flowers as large as in Miquel's picture, the other is much smaller. Not common, rocks overhanging the sea, Pulau Ubin.

F. obovata Wall. Not common, Kranji.

F. racemosa Jack. A big shrub or small tree with short thick racemes of pinkish white flowers. Rare here. Pulau Ubin quarries.

F. morindæfolia Bl. Shrub with slender racemes of pink flowers. Not uncommon. Bukit Timah, Kranji, Selitar, Sungei Loyang.

F. ligustrina Bl. A tree, leaves deep green small flowers slender creamy white with buff coloring in the throat, fragrant. Rare, Tampenis.

F. fragrans Roxb. "Tembusu." A large tree with cream yellow flowers, and orange berries. Well known for its timber. Sandy places, Changi. Abundant, Tanglin and other places near town.

F. speciosa Bl. A very much larger tree, with fewer and larger flowers. Garden jungle, Tyersall.

Norrisia malaccensis Garden. A fairly large tree, flowers white Garden jungle, Changi.

Strychnos Tieu'e Bl. "Ipoh Akar." A big climber with small tubular green flowers, fruit large globose gray green with a hard rind, seeds flat, enclosed in a bitter pulp.

Every part of the plant, even the flowers, is intensely bitter, from the presence of Brucine, nevertheless monkies and musangs often eat the fruit. The bark is used by the Sakais in their dart poison. Common in thick jungle. Garden jungle, Chan Chu Kang.

S. malaccensis Benth. Not common. Toas, Garden jungle.

S. pubescens Clarke. Bukit Timah.

Gaertnera Koenigii Wt. var. *oxyphylla* Wall. Singapore (Wallich); not seen.

G. viminea Hook. fil. Small slender shrub, with very small white flowers. Common, Garden jungle, Bukit Timah, Pulau Ubin, Changi.

G. obesa Hook. fil. An unbranched erect shrub with dark green leaves and heads of white flowers, berries pale blue. Common in jungles, Tanglin, Selitar, Bukit Arang, Toas, Sungei Buluh, Bukit Timah.

G. grisea Hook. fil. Not rare, Bukit Timah, Changi, Chan Chu Kang, Sungei Morai.

GENTIANACEÆ.

Limnanthemum indicum Thw. An aquatic plant with round floating leaves and a tuft of white flowers with a yellow centre. Reservoir.

BORAGINEÆ.

Tournefortia Wallichii De C. Climber, flowers green. Thickets, Bukit Panjang, Jurong, Bukit Mandai.

Heliotropium indicum L. A common weed in waste ground everywhere.

Cordia myxa L. Shrub, Chan Chu Kang, Pasir Panjang.

CONVOLVULACEÆ.

Erycibe malaccensis Clarke. Not common, Chan Chu Kang.

E. Princei Wall. "Akar Kijang." Flowers white, coarsely scented, drupes black. Common, hedges, Tanglin, Jurong Kranji, Chan Chu Kang.

E. Griffithii Clarke. Not common, Garden jungle, Bukit Timah.

E. coriacea Wall. Not common, Changi.

E. leucoxyloides King. A small-leaved climber, flowers white sweet. Thickets and woods, rarely flowering, common, Tanglin, Chan Chu Kang, Bukit Timah, Changi.

Lettsomia tomentosa. "Akar Terong." Climber, with heads of white flowers with pink plaits, bracts pink, and fruit pink. Woods, Chan Chu Kang, Chua Chu Kang, North Selitar.

Ipomea digitata L. A large pink convolvulus. Not rare, Bukit Timah Road, Loyang, Changi beach, Chan Chu Kang.

I. angustifolia Jacq. Small climber, flowers pale yellow or nearly white eye maroon. Common in grass, or bushes. Tanglin, Changi, Chan Chu Kang, Kranji.

I. tridentata Roth. Prostrate with slender stems, flowers small white. Sandy spots, Changi.

I. linifolia Bl. Twining and creeping in grass, flowers pale yellow. Common, Tanglin, Chan Chu Kang.

I. chryseides Ker. Flowers in heads small lemon yellow Waste ground, Tanglin, Government Hill, Bukit Timah Road, Bajau.

I biloba Forsk. "Tapak kuda." Flowers large pink. Sea shores, common, Changi, Sungei Morai.

I. denticulata Chois. Flowers pink. Sea shores, Teluk Kurau.

I. palmata Forsk. Hedges, Tanglin, Sophia Road.

I. sepiaria Koen. White with a pink eye; *I. quamoclit* L. and *coccinea* with small scarlet flowers; *I. batatas* L. the sweet potato, "Keledi," flowers pink; and *I. aquatica* Forsk. "Kangkong," a white flowered aquatic eaten as spinach, occur as escapes from cultivation here and there.

Evolvulus alsinoides L. A little prostrate plant, flowers light blue. Sandy spots, Changi.

SOLANACEÆ.

I doubt that any of these, except one *Solanum*, are native to Singapore.

Solanum nigrum L. Galang.

S. torvum Sw. Shrub with white flowers, the leaves smoked by Malays like tobacco. Waste ground, Tanglin.

S. melongena L. "Brinjal." Cultivated.

S. sarmentosum Nees. A prickly prostrate plant with blue flowers and black fruits, weed. Botanic Gardens.

S. aculeatissimum Jacq. "Terong Blanda." A prickly shrub with white flowers, and smooth red orange fruits. Sandy places, Tanjong Katong, perhaps wild.

S. biflorum Lour. Singapore (Wallich); more probably an error for Penang. It is a hill plant.

Capsicum frutescens L. *C. minimum*, and more rarely *C. grossum* Willd. are much cultivated, and the two first occasionally occur as escapes.

Datura fastuosa L. "Kachubong." Weed in waste ground. often planted for use in medicine. Tanglin, etc., Pulau Ubin.

SCROPHULARINEAE.

Mazus rugosus Lour. Small weed, flowers pale violet almost white in the centre of the lip, where are 4 or 5 yellow spots. Waste ground, Botanic gardens.

Adenosma ovatum Benth. An aromatic herb about 2 feet tall with axillary pale blue flowers. Road sides, not rare, Tanglin, Chan Chu Kang.

A. capitatum Benth. "Kuching-Kuching." Aromatic, flowers in heads blue. Sandy fields, Tanglin, Chan Chu Kang, Jurong, Serangoon.

A. cœruleum Br. Singapore (Fl. Brit. Ind.); not seen.

Limnophila conferta Benth. "Bremi." A little aromatic herb with violet flowers, used in native medicine. Common in damp spots, Tanglin, Bukit Timah, Reservoir, Bukit Mandai.

L. pulcherrima Hook. fil. Wet spots, Selitar, Bukit Timah, Bukit Mandai, Chan Chu Kang, Jurong.

Herpestes Monniera H. Bk. A small glabrous herb in wet spots, flowers white or blue. Common, Bukit Timah, Rochore, Serangoon, Teluk Kurau, Tampenis, etc.

Artanema angustifolium Benth. Singapore (Wallich 3885), not seen.

Torenia polygonoides Benth. Common little creeping plant in grass, upper lip of corolla red, lower white. Whole island, Tanglin, Changi, etc.

T. mucronulata Benth. Weed in Botanic gardens, Bukit Timah.

Vandellia crustacea Benth. "Kra Nasi." Common little weed with violet flowers. Paths and waste ground everywhere.

V. scabra Benth. Flowers pink. Teluk Kurau.

V. hirsuta Benth. Little weed, hairy, flowers pale lilac. Garden weed.

V. pedunculata Griff. Wet spots, flowers pale violet. Government Hill.

Bonnaya veronicæfolia Spreng. Wet spots, Chan Chu Kang, Ang Mo Kio.

B. reptans Spreng. Chan Chu Kang, Bukit Panjang.

B. brachiata Link. Chan Chu Kang.

Scoparia dulcis L. "Té Macao." A common weed with small white flowers. A tea for fever is made of it. Whole island.

Striga lutea Lour. "Rumput Siku-Siku." A little stiff erect herb in grass, flowers pink, or white here. Common, Tanglin, Changi, Chan Chu Kang.

LENTIBULARIEÆ.

Utricularia flexuosa Vahl. "Lumut Ekor Kuching." Aquatic with bright yellow flowers. Pools, lakes, and ditches. Common. Garden Lake, Reservoir, Bukit Timah, Changi Road.

U. exoleta Br. Much smaller than the last. Garden lake, ditches Tanglin, Ang Mo Kio.

U. bifida L. A small erect plant with yellow flowers. Common in shallow ditches and wet sand. Bukit Timah, Chan Chu Kang, Reservoir, Bedok.

U. affinis var. *Griffithii.* A tall slender species with bright blue flowers. In shallow ditches, Changi, Tampenis, Bedok, Choa Chu Kang.

U. racemosa *Wall.* Very slender, with very small white flowers. Sandy spots towards Tanah Merah, Changi.

GESNERACEÆ.

Æschynanthus Motleyi Clarke. An epiphyte forming large tufts with pendulous branches, leaves pink on the back. Calyx lobes very narrow purple. Corolla green marked in the mouth with brownish red. Woods, not rare, Bukit Mandai, Kranji, Choa Chu Kang, Teban, Selitar.

Æ. Lobbiana Hook. Climbing epiphyte, flowers crimson scarlet showy. Common in damp woods, and mangrove swamps, Kranji, Toas, Chan Chu Kang.

Æ. radicans Jack. Creeping over rocks and trees, flowers crimson. Local. Bukit Timah, Choa Chu Kang.

Æ. Wallichii Br. Calyx short cup-shaped green, corolla crimson. Dense woods, Bukit Mandai, Kranji, Chan Chu Kang.

Didymocarpus platypus Clarke. A shrubby plant with white rarely bluish flowers, with a yellow spot in the mouth. Common, woods, Bukit Timah, Bukit Mandai, Chan Chu Kang, Changi.

D. sp. Very rare, two plants out of flower in a wooded ravine near Bukit Mandai.

Cyrtandra bicolor Jack. A shrubby plant, flowers white with brown or purple spots in the mouth. Leaves sometimes marbled white. *C. humilis* Bl. "Singapore, Prince," in Flor. Brit. Ind. is evidently the same thing. Damp ravines in wet jungle, usually very abundant. Bukit Timah, Bukit Mandai, Choa Chu Kang.

C. pilosa Bl. "Singapore Lobb," and *Cyrtandromœa acuminata* Benth. Maingay and Lobb, in Flor. Brit. Ind. evidently errors of locality

BIGONIACEÆ.

Dolichandrone Rheedii Seem. Shrub or tree with long tubular white flowers opening in the early morning and closing soon. Common. Tidal Rivers, Alexandra Road, Blakang Mati, Bajau, Ponggol, Pulau Ubin.

Stereospermum chelonoides De C. Tree. "Chachar." Rare, Bukit Timah.

S. hyposticta Miq. Tree, flowers white or violet. Not rare, Tanglin, Bukit Timah, Bukit Mandai.

PEDALINEÆ.

Sesamum indicum De C. Til-seed. "Bijan." Weed in waste ground. Flowers pink rarely white. ! Cultivated for the seed, which is crushed for oil. Tanglin, etc.

ACANTHACEÆ.

Thunbergia alata Bojer., climber with yellow or orange flowers with or without black eye, and *T. fragrans* Roxb. with white flowers, are common in hedges, being escapes from cultivation.

Ebermaiera Griffithiana Anders. Dense jungle, Bukit Timah.

E. setigera Nees. Dense jungle, Bukit Timah, Chan Chu Kang, Chua Chu Kang, Jurong.

Hygrophila salicifolia Nees. "Chukal." Herb about 2 feet, flowers lilac, ditches, common. Garden lake, Tanglin, Bukit Timah road, Changi.

H. quadrivalvis Nees. Changi, Bukit Mandai.

Ruellia repens L. Erect or creeping in grass, flowers pale lilac with darker marks in the throat. Very common, Tanglin Changi, Bajau, Selitar, etc.

Acanthus ebracteatus Vahl. "Jeruju." A holly-leaved plant with white or blue flowers. Common in tidal mud. Kandang Kerbau, Tanjong Pagar, Alexandra Road, Changi, etc.

A. volubilis Wall. Twining, leaves not prickly flowers white. Not common, Bajau, Kranji, Chan Chu Kang.

Asystasia intrusa Bl. Straggling plant 3 feet tall or less, flowers pale violet. Hedges and thickets. Fort Canning, Government Hill, Tanglin, Chua Chu Kang.

Eranthemum album Nees. Flowers white, Jungles, local, Changi, Chan Chu Kang, Ponggol, Selitar, Choa Chu Kang.

(*E. Andersoni* Masters, described from a plant obtained in Singapore by T. Anderson, is only cultivated here.)

Justicia andrographioides Clarke. A straggling herb, with pale yellow flowers, leaves veined with white when young. Damp woods, Bukit Mandai, Chan Chu Kang.

J. Gendarussa L. "Ganda Rusa." A common shrub round villages, usually an escape from cultivation.

Adhatoda vasica Nees. "Singapore, Flor. Brit. Ind." Not seen even cultivated.

Peristrophe acuminata Nees. Common herb with pink flowers. Ang Mo Kio, Choa Chu Kang, Tanglin.

P. montana Nees. "Noja." Flowers pink, larger than the last. Leaves used for dyeing eggs, cakes, etc., pink. Tanglin, Blakang Mati, Jurong.

VERBENACEÆ.

Lantana Camara L. "Tahi Ayam." All over Singapore, very common. There are several color varieties, the commonest is orange red color, turning orange yellow when passing over ; another form is pale pink with a yellow eye turning darker pink, and where these two forms grow together there is an intermediate or hybrid form. There is a slight difference in the form of the lower lip in the two forms, in the orange one the lip is shorter and broader than in the pink one, where it is nearly quadrate, so that the pink flower appears more irregular than the orange one. The plant is a native of South America.

L. indica Roxb. A smaller shrub with lilac flowers, and dark pink fruits. Waste ground near town, abundant, Rochore, Kalang, Balestier plain.

Lippia nodiflora Rich. Prostrate herb, flowers lilac. Waste ground, Rochore.

Stachytarpheta indica Vahl. "Selasih Dende." Common shrub, flowers blue. Waste ground, everywhere.

(*S. mutabilis*, much bigger, with rosy flowers, introduced here and there.)

Geunsia farinosa Bl. (Wallich, No. 1836); not seen.

(*Callicarpa Reevesii* Wall. Singapore, Murton in Fl. Brit. Ind. is cultivated only.)

C. longifolia Lam. Shrub, lilac flowers and white fruit. "Tampoh Besih." Common in hedges, Bukit Timah, Tanglin, Ang Mo Kio.

Premna. "Buas Buas." A group of shrubs with small white flowers, and black drupes. All very closely allied and difficult to distinguish.

P. cordifolia Roxb. Tanglin, Thomson Road.

P. parasitica Bl. Changi.

P. corymbosa Roth. Climber, Garden jungle.

P. flavescens var. *rubens.* Pasir Panjang.

P. coriacea Clarke. Jurong.

P. integrifolia var. *angustior.* A low prostrate plant, Serangoon River.

Gmelina villosa Roxb. "Bulang." A thorny shrub, with large yellow flowers, fruit a yellow acid plum. Common, Tanglin, Changi, Teluk Kurau.

G. Hystrix Kurz. occurs in the Garden road, possibly wild.

Vitex trifolia L. "Lagundi." Often planted, possibly wild at Bajau.

V. Negundo L. Bukit Timah Road, Bukit Mandai; probably an alien.

V. pubescens Vahl. "Alban." Tree, flowers blue, very common in secondary growth. Whole island.

V. vestita Wall, Tree, flowers yellow. Common in woods, Bukit Timah, Chan Chu Kang.

V. gamosepala var. Tree, rare, Changi.

Clerodendron inerme Gaertn. Shrub, flowers white stamens pink. Very abundant near the sea, Rochore, Changi, Selitar.

C. disparifolium Bl. "Guriam Padang." Small tree, flowers yellow, fruit black with a red calyx. The wood is used for blackening the teeth. Very common in woods and thickets. Tanglin, Bukit Timah, Changi, etc.

Cl. deflexum Wall. A small shrub about 4 feet high with nodding heads of white flowers surrounded with numerous red sepals. Drupe black. Very common, Tanglin, Garden jungle, Chan Chu Kang, Tampenis.

Cl. paniculatum L. Shrub with brilliant crimson flowers. Mandai, Kranji. Doubtfully wild.

Cl. villosum Bl. Common shrub with white flowers. Whole island.

Cl. myrmecophilum Ridl. * A slender shrub, with the stem hollow and filled with ants' nests. Panicles large, flowers orange. A handsome plant, rare, streams at Choa Chu Kang. Several cultivated kinds also occur in waste ground near villages; such are *C. fallax* Lindl. *C. squamatum* Vahl. *C. fragrans* Vent. and *C. siphonanthus* Br. which is cultivated by Klings, who use the leaves for smoking instead of Hemp, and call it Ganja.

Cl. ixoræflorum Hassk. A white flowered species, introduced into Java from Singapore about 1855, I know nothing of, and *Cl. Colebrookianum* Walp. "Singapore Lobb" and *Cl. infortunatum* Gaertn. mentioned from Singapore also in Flor. Brit. Ind. I have never met with.

Sphenodesma pentandra Jack. "Akar Sulong." Not common, Changi.

Avicennia officinalis Bl. "Api-Api." Very common in mangroves and along tidal rivers. River Valley Road, Changi, Pulau Ubin, etc.

LABIATÆ.

Coleus atropurpureus Benth. Flowers bright purple. Open country. Ang Mo Kio, Chan Chu Kang.

Hyptis suaveolens Poit. Very common in waste ground. Sepoy Lines, Tanjong Katong, Mt. Faber, Changi, etc.

H. brevipes Poit. Common, Tanglin, Ang Mo Kio, etc. Both of these are introductions from South America, now thoroughly established.

Dysophylla auricularia Bl. "Ekor Kuching." Flowers pale lavender in long spikes. Very common in wet spots. Tanglin, Changi, etc.

Anisomeles ovata Br. Not common, Tanglin.

Leucas zeylanica Br. "Katumbet." A common weed with white flowers, waste ground. Tanglin, Blakang Mati, Selitar, etc.

L. linifolia Spr. Less common, Mt. Faber, Siglap.

Ocimum basilicum L. Basil. "Ruku-Ruku," often cultivated, occurs spontaneously in waste ground, as does also *Leonurus sibiricus* L. and *Leonotis nepetæfolia* Br.

PLANTAGINEÆ.

Plantago major L. "Ekor Angin." Waste ground, Chan Chu Kang, Tanglin, etc.

NYCTAGINEÆ.

Boerhaavia repens L. Sandy places, Galang.

AMARANTACEÆ.

Allmania nodiflora Br. Sandy spots. Changi, common.

Amarantus spinosus L. "Bayam Duri." Common weed in waste ground. Tanglin, Rochore, etc.

A. viridis L. "Bayam Itek." Common in waste ground, everywhere.

A. caudatus L. Cultivated, and often as an escape.

A. paniculatus L. Government Hill.

Cyathula prostrata Bl. Not rare, weed in waste ground. Bukit Timah, Pulau Ubin, Teluk Kurau.

Alternanthera sessilis Br. Common everywhere.

Pupalia atropurpurea Miq. Singapore (Wallich in Flor. Brit. Ind., but in Wallich's Catalogue it is labelled 6933 L. Singapore et Penang). Not seen here by me.

POLYGONACEÆ.

Polygonum flaccidum Meisn. Common in wet spots, ditches, etc. Tanglin, Bukit Timah Road, Rochore.

P. pedunculare Wall. Singapore. Wallich, not seen.

P. barbatum L. Ditches, Holland Road, Galang, Chan Chu Kang.

NEPENTHACEÆ.

The pitcher plants are known to the Malays as "Poko Priok Krah," (ape's cups). The stems of the stouter kinds are used for binding fences. They always occur in open country, borders of woods, etc., and are absent from dense jungle.

N. ampullaria Jack. A common kind with the pitchers in whorls often sunk in the ground, pitchers green, or more or less spotted with purple. I once found a plant with ivory white pitchers. Tanglin, Chan Chu Kang, etc.

N. Rafflesiana Jack. Pitchers often very large. Common all over Singapore.

N. phyllamphora Willd. Not common, Changi, Jurong.

N. Reinwardtii Miq. Common, Bukit Timah, Changi.

N. gracilis Korth. Blakang Mati, Changi, Bukit Timah.

N. albomarginata Lobb. "Singapore, Wallich." Surely an error for Penang, where it is abundant.

ARISTOLOCHIACEAE.

Aristolochia unguliflora Mast. A climber with large trilobed leaves and purple flowers. Local in long wet grass. Jurong.

Thottea grandiflora Rottb. "Seburut." A low shrub, 2 feet tall with rough hairy leaves, and bell-shaped flowers as big as a tumbler, hairy with raised veins outside, smooth deep purple inside. A very curious plant. Common in dry jungles, Bukit Timah, Reservoir woods, Bukit Mandai, Chan Chu Kang, Bajau.

Th. dependens Klotsch. Rare, Sungei Buluh.

PIPERACEÆ.

Piper (*Muldera*) *Maingayi* Hook. fil. Climber, rarely flowering. Common. Jungles, Bukit Timah, Chan Chu Kang.

P. (*Cubeba*) *sumatrana* Cas. Not common, Reservoir woods.

P. pedicellosum Wall. Rare, Chan Chu Kang.

P. muricatum Bl. An erect herb. Not very common, Bukit Timah, Chan Chu Kang, Jurong.

P. (*Charica*) *caninum* Bl. "Lada Hantu." Slender climber, common in woods. Garden jungle, Selitar, Kranji, Pulau Tekong.

var. *lanata*. Less common, in more exposed spots. Siglap, Chan Chu Kang, Pulau Ubin.

var. *angustifolium*. Garden jungle, Changi.

P. chaba L. "Bakek." Cultivated. I have also what may be a wild form of this under the name "Bakek hutan" from Bukit Mandai, (5851).

P. sarmentosum "Chabei." "Kadok." An erect herb with long runners. Common in orchards, villages, etc., all over Singapore.

(*P. Betel* L. "Sirih," and *P. nigrum* L. "Lada hitam" are often cultivated.)

P. miniatum Bl. "Sirih Ayer." Climber, fruit-spikes red. Woods, not rare, Reservoir woods, Bukit Mandai, Toas, Chan Chu Kang.

P. rostratum Roxb. Erect, rare, Bukit Timah.

P. porphyrophyllum E. Br. A well known ornamental climbing plant, leaves deep green spotted white and pink. Common but rarely flowering, dense woods, Bukit Timah, Selitar, etc.

(*Peperomia exigua* Miq. A little weed in gardens, on walls, etc., introduced. Tanglin, Chan Chu Kang).

CHLORANTHACEÆ.

Chloranthus officinalis Bl. Shrublet, with slender spikes of white flowers and translucent white berries. Damp ravines in jungles, local but abundant. Bukit Timah, Bukit Mandai, Jurong.

MYRISTICACEAE.

The wild nutmegs are very plentiful in Singapore, occurring in all the bigger jungles, but almost invariably in an isolated manner, so that it is often by no means easy to get both sexes of any species. They are all trees, varying in height from about fifteen feet to 100 or more. The seeds seem to be (in all but *M. cinnamomea*) deficient in aromatic properties, and are not used by the natives at all. The timber is often good. The native name for the cultivated Nutmeg is " Pala," the Mace being called " Bunga Pala," (literally flowers of Nutmeg). Many of the wild species are called " Pala Hutan," etc.; but " Pendarah," with the local variants Menarah, Mendarah, and Chendara, is the common name for other species.

M. elliptica Wall. Common, Bukit Timah, Bukit Mandai, Chan Chan Chu Kang. *var.* Bukit Mandai, Chan Chu Kang.

M. bracteata De C. A very large tree, rare, Bukit Timah.

M. cinnamomea King. Not common, Bukit Mandai, Sumbawang, Changi, Selitar.

M. crassa King. Flowers orange, Garden jungle, Bukit Mandai, North Selitar, Sungei Morai.

M. Lowiana King. Rare, Kranji.

M. iners Bl. Rare, woods, Bukit Mandai.

M. ferruginea Wall. (Cat. 6803.) Rare, Selitar.

M. superba Hook. fil. Rare, Sungei Bengkuang, Toas.

M. rubiginosa King. Rare, Garden jungle, Mt. Faber.

M. Wallichii Hook. fil. Bajau (3364), also collected by Cantley without locality.

M. sucosa King. Rare, Kranji (6558).

M. Farquhariana Wall. Common, Garden jungle, Bajau, Selitar.

M. Forbesii King. Selitar.

M. bivalvis Hook. fil. Very rare, a single male tree in the Botanic Gardens, probably planted, but not known elsewhere.

M. crassifolia Hook. fil. Bukit Mandai, Chan Chu Kang, Bajau.

M. Irya Gaertn. Rare, Garden jungle.

M. majuscula King. Not rare, Tanglin, Cluny road, Bukit Timah, Selitar.

M. brachiata King. Singapore (Wallich); not seen.

M. polysphærula Hook. fil. Not rare, Jurong, Chan Chu Kang, Kranji.

M. oblongifolia King. Rare, Bukit Timah.

M. conferta King. Bukit Mandai, Changi.

M. Wrayi King. Rare, Sungei Jurong.

M. intermedia Bl. The commonest species. Tanglin, Changi, Bukit Timah.

M. laurina Bl. Common, Garden jungle, Bukit Timah.

M. glauca Bl. Garden jungle, Kranji, Pulau Ubin.

M. glaucescens Hook. fil. Cluny Road.

M. Hookeriana Wall. Usually about 20 feet tall, with large leaves covered when young with brown wool which peels off as the leaves become coriaceous, fruit covered with brown wool. Not rare, Tanglin, Bukit Timah, Chan Chu Kang, Choa Chu Kang.

M. Cantleyi Hook. fil. Bukit Timah.

M. longifolia Wall. Bukit Timah.

M. pendulina Hook. The only tree of this species known is in the Botanic Gardens, but must have been planted.

MONIMIACEÆ.

Matthea sancta Bl. "Churom." A large shrub with small yellow flowers and steel blue fruits. The Jakuns smoke the leaves with tobacco to cure headaches. Common in woods and thickets, Garden jungle, Bukit Timah, Chan Chu Kang, Ang Mo Kio.

LAURINEÆ.

Trees, more rarely shrubs, with usually unisexual flowers A difficult group, owing to the difficulty of getting flowers of both sexes and fruits, many being imperfectly known. The trees are usually called "Medang" by the Malays.

Cryptocarya Griffithiana Wt. "Medang Buaya." Medium sized tree, with hairy yellow flowers. Not rare, Tampenis, Changi, Selitar, river, Changi Teban.

C. impressa Meissn. "Munjuat." A tall tree. Rare, Garden jungle.

C. ferrea Bl. Chan Chu Kang, Choa Chu Kang, Bukit Mandai. And two other species.

Beilschmiedia malaccensis Hook. fil. Rare, Bukit Timah.

Dehaasia microcarpa Bl. Sungei Jurong.

Cinnamomum javanicum Bl. Not rare in dense woods, but very rarely flowering. Garden jungle, Bukit Timah, Ang Mo Kio.

C. iners Reinwdt. A medium sized tree, never tall, common in open country. The young leaves are red and yellow and appearing just before flowering give the tree a fine appearance. The flowers are yellow and fœtid, the fruit blue-black. The bark is but feebly aromatic. Whole island, Tanglin, Changi, etc.

C. nitidum Bl. Very much like the last, but with larger flowers. Not common, Tanglin.

Phœbe opaca Bl. A big tree, flowers yellow, fruits black on swollen red peduncles. Garden jungle, Bukit Mandai.

Ph. declinata Nees. "Singapore, Wallich." Not identified.

Ph. sumatrana Miq. Changi (1811).

Machilus rimosus Bl. Changi (4707).

Alseodaphne decipiens Hook. fil. Small tree, flowers yellow, fruit obovate green with white spots. Garden jungle, Chan Chu Kang.

A. umbelliflora Hook. fil. Not common, Selitar, Chan Chu Kang.

A. costalis Nees. and *A. lucida* Nees. collected in Singapore by Wallich Nos. 2594 B and 2590, are entirely doubtful plants.

Actinodaphne pruinosa Nees. Botanic Gardens.

A. Maingayi Hook. fil. Dense woods, Bukit Timah.

Litsea grandis Bl. Near Tyersall, Bukit Mandai.

L. amara Bl. Jurong, Pulau Ubin.

L. penangiana Hook. fil. Common, flowers white, fruit white in a green cup. Woods, Tanglin, Bukit Timah.

L. myristicæfolia Wall. Siglap, Changi.

L. Panamonja Ham. Rare, Garden jungle.

L. longipes Meissn ? "Mullay." Rare, Balestier Road.

L. ferruginea Bl. Garden jungle, Bukit Arang.

L. zeylanica Nees. A large bush, common on the sea coast. Changi, Pulau Ubin, Bedoh.

L. salicifolia Roxb. Garden jungle.

L. polyantha Juss. Chan Chu Kang, Kranji, Changi.

L. petiolata Hook. fil. Garden jungle.

L. nitida Bl. Bukit Mandai.
And a number of unidentified species.

Lindèra malaccensis Hook. fil. Small tree, flowers yellow. Abundant in woods, Garden jungle, Tanglin, Bukit Timah, Chan Chu Kang, etc.

L. sp. "Perawas." Tree, leaves used medicinally. Galang, Garden jungle.

Cassytha filiformis L. A leafless twining parasite. Common near the sea, Blakang Mati, Changi, Chan Chu Kang, etc.

Hernandia peltata Meissn. Singapore, Wallich No. 7811. Not seen.

PROTEACEÆ.

Helicia petiolaris Benn. Tree, common in woods. Bukit Timah, Jurong, Woodlands, Kranji, Changi, Garden jungle.

H. excelsa Bl. "Membatu Laiang." Not very common, Changi, Chan Chu Kang.

THYMELEACEÆ.

Aquilaria malaccensis. The Gaharu, is rare here. I have only seen it at Kranji.

A. grandiflora. Rare, Bajau.

A. sp. A medium sized tree with small white flowers and very small fruits. Garden jungle.

Gonystylus Maingayi Hook. fil. This aberrant tree is now referred by some botanists to Tiliaceæ. It occurs in the Garden Jungle, Bukit Mandai and Chua Chu Kang.

Wikstroemia indica. "Singapore, Lobb;" doubtless an error.

SANTALACEÆ.

Henslowia Lobbiana De C. Climber. Common near the coast, Changi, Kranji, Chan Chu Kang.

H. buxifolia Bl. Apparently a root parasite. It is a twiggy, often nearly leafless shrub, entirely bright yellow. Berry at first yellow, then red and finally black. Dry woods near the sea, Bajau, Changi, Kranji, Sungei Buluh.

Scleropyrum Maingayi Hook. fil. "Rukam puteh." A shrub or small tree with stout spines, flowers greenish yellow in dense spikes, fruit pear-shaped green juicy when ripe. Woods, not rare, Tanglin, Changi, Kranji, Bukit Mandai, Selitar.

Champereia Griffithiana Planch. "Chemperei." A shrub with white branches, small light brown flowers and orange fruit. The leaves are eaten as a vegetable, but it is said to be poisonous to dogs. Sandy spots on the coasts, Changi, Tampenis, Selitar, Bajau.

Linostoma pauciflorum Griff. A slender climber with light yellowish green flowers enclosed in greenish cream colored bracts. Common, Garden jungle, Blakang Mati, Bukit Timah, Changi, Loyang.

L. scandens King. "Akar kareh hitam." A scandent shrub or tall climber. Common, Garden jungle, Changi, Chan Chu Kang.

LORANTHACEÆ.

These parasites are often very destructive to trees in gardens. They are called by the Malays "Api-Api" or Senalu, with its variants Bendalu, Ndalu.

Loranthus Lobbii Hook. fil. A variety with red, not yellow flowers. Changi, Chan Chu Kang.

L. coccineus Jack. Bukit Mandai.

L. ferrugineus Roxb. Common, Tanglin, etc.

L. longiflorus Desr. Flowers crimson-scarlet. On a very lofty tree, Bukit Timah.

L. pentandrus L. A big stout plant, flowers light pinkish red; parasitic on Eugenia. Gardens, Alma, Bukit Timah, Chan Chu Kang.

L. albidus Bl. Flowers white, rare, Bukit Timah.

L. retusus Jack. On *Rhodomyrtus* and *Eugenias*, near the sea. Changi, Blakang Mati, Pulau Tekong, Jurong.

L. ampullaceus Roxb. Flowers green and black. Very common, Tanglin, Changi, Chan Chu Kang.

L. crassus Hook. fil. Gardens, Changi.

L. Maingayi Hook. fil. A very curious little flowered species, flowers brown. Rare, Kranji (6923).

Viscum articulatum Burm. Parasitic on *Loranthi*. Common, Tanglin.

V. orientale Willd. On *Ficus*, and *Macaranga javanica*. Common, Rochore, Bukit Timah, Jurong, Chan Chu Kang, etc.

EUPHORBIACEÆ.

Euphorbia atoto Forst. A shrubby plant, sea coasts, Changi.

E. pilulifera L. "Gelang Susu." Common weed in waste ground, everywhere.

E. thymifolia Benn. Prostrate weed, waste ground, paths, etc. Common, Tanglin, etc.

(*E. Tirucalli* L. A large succulent shrub, often cultivated, occurs as an escape. The milk is used in native medicine, and for putting into the wounds made for marking cattle to make the marks permanent. Said to be a native of Africa.)

Agyneia bacciformis Muell. A little shrubby plant, in grass, seashore. Teluk Kurau.

Bridelia tomentosa Bl. "Kenidai." Shrub or small tree. Garden jungle.

B. pustulata Hook. fil. Shrub. Jurong, Selitar.

Cleistanthus lævis Hook. fil. Tree, Garden jungle, Changi.

Cl. myrianthus Kurz. Bushy tree with coppery leaves. Kranji road, near Stagmount, Jurong, Chan Chu Kang.

C. hirsutulus Hook, fil. Rare, Bukit Timah.

C. macrophyllus Hook. fil. Rare, Bukit Timah.

C. nitidus Hook. fil. "Singapore, Lobb"; doubtless Penang.

Actephila javanica Miq. Wallich 8016. A shrub with very small greenish white flowers. Common, Garden jungle, Bukit Timah, Bukit Mandai.

Phyllanthus pectinatus Hook. fil. "Laka, Malakka." A handsome tree with a trunk like a yew and elegant feathery foliage. The fruit a yellowish green angled drupe, acid, and used for preserves and in curries. The town of Malacca is said to take its name from the tree. Common in woods, Bukit Timah, Chan Chu Kang, Mandai.

P. coriaceus Wall. "Singapore, Wallich 7946." Not seen only known from Wallich's collection.

P. pulcher Wall. *Reidia glaucescens* Miq. Small shrub, sometimes cultivated as an ornamental plant, possibly wild, but usually seen about cultivated ground. Tanglin.

P. maderaspatensis L. A small weed. Changi.

P. niruri Wall. "Dukong Anak Merah." Common weed, waste ground, Tanglin, Galang, Changi.

P. urinaria L. "Dukong Anak." Common weed everywhere, used medicinally, and it is also supposed that after chewing a bunch of this plant it is possible to bite up glass with impunity.

(*P. distichus* Muell. *Cicca acidissima* is sometimes cultivated.)

Glochidion. Trees with inconspicuous flowers. "Ubah," of the Malays.

G. littorale Bl. Banks of tidal rivers. Chan Chu Kang.

G. goniocarpum Hook. fil. Not rare, Tanglin, Bukit Timah, Galang.

G. desmogyne Hook. fil. Rare, Bukit Timah, Selitar.

G. insulare Hook. fil. Not rare, Selitar, Bukit Mandai, Toas, Jurong, etc.

G. brunneum Hook. fil. "Ubah Merah." Gardens, Bukit Timah.

G. desmocarpum Hook. fil. Not common, Tanglin, Bajau.

G. lævigatum Hook. fil. Bukit Timah, Sungei Bruang, Bukit Mandai.

G. microbotrys Hook. fil. Tall tree with flaking bark. Flowers very small scented of cucumbers. Gardens, Chan Chu Kang, Changi, Pulau Ubin.

G. superbum Baill. Small tree with large leaves. Common in open country all over Singapore.

G. leiostylum Kurz. Common, Gardens, Selitar.

G. coronatum Hook. fil. Rare, Jalan Bray.

Breynia rhamnoides Muell. Large shrub. Eskbank (Hullett).

B. discigera Muell. Rare, Upper Bukit Timah.

B. reclinata Hook. fil. "Hujan Panas." A shrub conspicuous from its bright red berries, but why called Hujan Panas, lit. warm rain, no one seems to know. Very common, especially near the sea, Tanglin, Reservoir, Changi, etc.

Sauropus albicans Bl. "Chekop Manis." A small shrubby plant with dark green leaves with a white central blotch, red flowers and pink or white fruit. A popular native vegetable, leaves eaten as spinach. Waste ground, common.

Cyclostemon longifolius Bl. A tree with pendent branches and large leathery leaves. Rarely met with in flower. Common in woods, Garden jungle, Selitar.

Choriophyllum malayanum Benth. Sandy spots near the sea. Rare, Seremban; also collected by Wallich, 7975.

Aporosa ficifolia Baill. Not rare, Bukit Timah, Chan Chu Kang, Garden jungle.

A. nigricans Hook. fil. Tanglin, Bukit Timah, Bukit Mandai.

A. Maingayi Hook. fil. A shrub, Garden jungle, Selitar, Kranji, Jurong.

A. fruticosa Muell. A bush. common, Tanglin, Tanjong Gol, Chan Chu Kang.

A. Praineana King. Bukit Mandai, Selitar, Kranji.

A. Benthamiana Hook. fil. Tree, about 40 feet tall, with red showy fruits. Not rare, Tanglin, Bukit Timah, Chan Chu Kang.

A. lunata Benth. Not common, Jurong.

A. stellifera Hook. fil. Garden jungle, Kranji, Bukit Timah.

A. falcifera Hook. fil. Not common, Jurong, Toas.

Daphniphyllum laurinum Baill. "Ruas-Ruas jantan." A big shrub or tree with white flowers, and olive shaped green fruits. Usually near the sea, Changi, Kranji, Teban, Siglap.

Antidesma velutinosum Bl. Shrub with racemes of pink fruits. Common, Garden jungle, Changi, Pulau Ubin, etc.

A. cuspidatum Muell. "Sebasah." A big shrub, common in thick woods, Bukit Timah, Changi, Bukit Mandai, Teban, Reservoir woods.

A. fallax Meisn. Not common, Bukit Timah.

A. alatum Hook. fil. Thick woods, common, Bukit Timah, Changi, Bukit Mandai, Jurong.

A. bunias Spreng and *A. ghaesembilla* Gaertn. mentioned in Flora Brit. Ind. I have not seen wild.

Baccaurea. A genus of trees of no great size, with flowers in long scented racemes. Fruit usually a capsule, orange colored or brown, splitting and disclosing the seeds enwrapped in an orange pulp hanging from the placentas; sometimes the fruit is a berry, and does not split. Most are more or less eatable though often acid.

B. parviflora Muell. "Setambun." A small tree with a knotted stem, and very hard compact yellow wood, used for making sticks. The male flowers are borne in racemes in tufts on the stem, they are yellow and smell like cowslips. The female racemes are borne at the foot of the tree, so as to lie on the ground. The fruit is a spindle-shaped berry, claret colored and eatable though acid. A common plant. Tanglin, Bajau, Changi, etc.

B. macrophylla Muell. Tree small or medium. Fruits globose dull orange russet, pulp of seed orange, sweet. Garden jungle, Selitar.

B. motleyana King. "Rambai." A well known fruit, common in cultivation and apparently also wild.

(*B. Malayana* King. "Tampoi." Occurs in cultivation but is not common.)

B. bracteata Muell. A small tree. Common, Bukit Mandai, Holland Road, Kranji.

B. latifolia King. Garden jungle (6264).

B. sp. B. in Flor. Brit. Ind. Garden jungle, Kranji.

B. reticulata Hook. fil. Kranji, Selitar.

B. Kunstleri King. A fair sized tree, fruits ochreous, with orange pulp. Common, Garden jungle, Selitar, Tanjong Gol.

B. minor Hook. fil. Fruit as big as a cherry, ochreous pulp orange. Garden jungle, Bukit Timah.

B. symplocoides King. A small tree, fruits orange, aril crimson. Garden jungle, Chan Chu Kang.

B. sp. Tree with narrow lanceolate acute leaves, flowers green. Garden Jungle (6263).

Microdesmis caseariifolia Planch. A small tree, flowers bright yellow, berries red. Thick woods, common, Garden jungle, Changi.

Galearia. Low shrubs with long slender spikes of very small flowers, fruits white pulpy. The species are all very much alike and difficult to distinguish.

G. affinis Benn. Woods. Garden jungle, Changi, Bajau.

G. Wallichii Br. Changi (Hullett).

G. subulata Muell. Garden jungle.

G. phlebocarpa Br. The commonest species. Garden jungle, Bukit Timah, Chan Chu Kang, Pulau Ubin.

G. sp. with the leaves pubescent beneath, shoots and racemes covered with black pubescence. Changi, Siglap.

(*Jatropha curcas* L. "Jarak Blanda." Occurs in and near villages.)

(*J. gossypifolia* L. A garden escape, occurs here and there).

(*Aleurites Moluccana* Willd. Candle nut Singapore nut, Kamiri, Buah Kras, is often cultivated).

Croton argyratus Bl. A shrub, leaves silvery beneath. Local, Batu Putih, Changi.

C. caudatus Geisel. "Tuku Takal." There are two forms, if they are not specifically distinct here, one a long stout woody liana with rough greenish capsules. Common at Tanglin, Chan Chu Kang. The other a scandent or erect shrub with erect racemes of white flowers and hard globose yellow capsules as big as a bullet.

Common in open country. Tanglin, Bukit Timah, Bajau, Changi.

C. Griffithii Hook. fil. A common shrub in woods. Garden jungle, Bukit Timah, Sungei Buluh, Chan Chu Kang.

C. oblongifolium Roxb. Bukit Mandai, Selitar.

Trigonostemon longifolius Baill. A small shrub. Not common, Chan Chu Kang, Kranji Road.

Ostodes macrophyllus "Kayu Julong." A tree, rare, Bukit Panjang (common in Malacca).

O. muricata var. *minor* and *Dimorphocalyx capillipes* Hook. fil. "Singapore Lobb"; evidently an error for Penang.

Agrostistachys filipendula Hook. fil. A big stiff shrub. A gum which exudes from the buds was formerly collected for making a resin for polishing sheaths of Krises. Local. Sandy spots near Changi.

A. longifolia Benth. var. *Malayana.* "Julong Julong." A low little or unbranched shrub, with large erect stiff leaves, used for thatching and wrappers. The Singapore plant is very different from that of Pahang and Perak, which is a much larger branched shrub. Common in woods. Tanglin, Sungei Buluh, Chan Chu Kang, etc.

Claoxylon indicum Hassk. A large shrub. Thickets, Grange Road.

Cl. longifolium Muell var. *brachystachys.* Woods, not rare, Bukit Timah, Pulau Ubin, Bukit Mandai, Chan Chu Kang.

Acalypha indica L. A weed, common in waste ground. Bajau, Galang, Pulau Ubin, Teluk Kurau.

Cœlodepas ferrugineum Hook. fil. A small tree with long slender yellow flower spikes, and capsules covered with brown wool. Garden jungle (5991, 6481), Bukit Timah.

Alchornea villosa Muell. "Ramin bukit." A big shrub, the bark used for string. Common in thickets and edges of woods. Bukit Timah Road, Reservoir woods, Chau Chu Kang, Bukit Mandai.

A. rugosa Muell. Common, Changi, Serangoon.

Mallotus macrostachyus Muell. A big shrub. Thickets, Bukit Timah Road at the 9th mile.

M. Cochinchinensis Lour. "Balik Angin." A small tree, pretty when in flower from its pendent white racemes. The under side of the leaves is white, so that when blown by the wind the whole tree appears white, whence the native name. A fairly good fibre can be obtained from the bark. Common in open country, Tanglin, Kranji, etc.

M. penangensis Muell. Not common, Bajau, Toas, Sungei Morai.

M. philippinensis Muell, and *M. barbatus* Muell, given in Flor. Brit. Ind. as from Singapore; (the latter collected by Lobb) are doubtless errors.

M. vernicosus Hook. fil. "Singapore Botanical Garden, Cantley" is altogether doubtful.

Macaranga hypoleuca Muell. A fair sized tree with white stems and white undersides to the leaves. Sticks of its wood are used for setting gambier. Common in dry woods and secondary growth, all over Singapore. "Mahang putih."

M. megalophylla Muell. "Kubin." A fair sized tree with very large leaves. The wood used for making windmills, hence its name. Selitar, Choa Chu Kang.

M. trichocarpa Muell. A shrub half scandent, with irritating prickly capsules. Dry woods, common, Tanglin, Bukit Timah, Changi.

M. javanica Muell. "Mahang." A common tree all over the island with reddish inflorescence, and small capsules bilobed smooth, and covered with a waxy coat. It is doubtful whether this is the same as the Javanese species. Open country and secondary growth, exceedingly common.

M. triloba Muell. A medium sized tree, leaves entire or three lobed. Young plants have red leaves, and look very handsome. Abundant all over Singapore, in woods, Tanglin, Changi, Pulau Ubin.

M. Lowii King. Not common, Jurong, Tyersall, Chan Chu Kang.

M. populifolia Muell. Big tree, in woods, Bukit Timah.

Ptychopyxis costata Miq. A big tree, flowers velvety yellow, fruit large green hairy wrinkled. Not common, Garden jungle, Chan Chu Kang.

(*Ricinus communis L.* "Jarak," Castor oil; occurs near villages.)

Endospermum malaccense Muell. "Sendok-sendok." A big tree, with smooth grey bark, flowers green very sweet, fruit as large as a pea, orange, sweet. The wood is used to make clogs. Not rare, Bukit Timah, Chua Chu Kang.

E. chinense Benth. Singapore, Wallich 7846; a doubtful specimen.

Gelonium multiflorum Juss. Woods, Changi, Bukit Timah.

G. bifarium Roxb. Sea coasts, Changi, Pulau Ubin.

Megistostigma malaccense Hook. fil. A stinging climber. Garden jungle.

Homalanthus populifolius Grah. Occurs here and there, about the Alexandra road and elsewhere, probably planted.

Sapium discolor Muell. A tall tree, very common, Tanglin, Jurong, Reservoir.

S. indicum Roxb. "Guring." Sea coasts, Kranji, Pasir Panjang.

Excœcaria agallocha L. A small tree full of poisonous milk, flowers green, very fragrant. Sea coasts, often growing between rocks. All round the coasts, Kranji, North Selitar, Toas.

Sebastiania chamælea Muell. A herb. Sandy spots, Changi, Blakang Mati.

URTICACEÆ.

Trema orientalis Bl. A common shrub in waste ground. Tanglin, Changi.

T. angustifolia Bl. Not common, Changi.

T. timorensis Bl. Very common, Tanglin, Chan Chu Kang.

Gironniera nervosa Planch. "Kasap." A big tree, with small bright orange-colored fruits. Common in woods, Tanglin, Chan Chu Kang, Changi.

G. subaequalis Planch. A big tree, less common, Tanglin, Chan Chu Kang.

G. parvifolia Planch. A small tree in dense jungle common in the hill districts of the peninsula, rare in Singapore, Bukit Timah, Kranji.

Streblus asper Lour. A climber with milky juice. Rare, Pulau Ubin.

Sloetia sideroxylon Teysm. "Tampenis." A big tree with dark brown heart wood, one of the best timbers in the region, being untouched by termites and unaffected by ordinary decay for a very long time. The wood when fresh cut exhales an unpleasant odor. Large trees are now scarce as the natives cut them when young to make carrying sticks, and gambier stirrers, etc. There is a good deal of difference in the size of the leaves according to the age of the tree. Young shoots from an old stump usually have large leaves, and it seems to me that *S. penangiana* Oliv and *S. Wallichii* King are mere states of *S. sideroxylon*, Teysm. The natives however certainly draw a distinction between some forms calling *S. Wallichii*, Tampenis putih and *S. sideroxylon*, Tampenis Merah, i.e. red and white Tampenis. The plant flowers very readily, even seedlings in a pot sometimes flower and fruit when only a foot and a half tall. The fruit is a soft white drupe enclosed in the four thickened white sepals. These are sweet and eatable and any pressure on them ejects the fruit to some distance so that if a bird attempts to eat them the fruit is thrown out.

Common in dry woods, open country, etc., especially the broad leaved var. *penangiana* Tanglin, Chan Chu Kang, Changi, etc.

Ficus. The figs are tolerably well represented here, no less than 35 species occurring in the island. They comprise creeping shrubs, big climbers, erect shrubs from two feet tall to trees of great size. The figs, none of which here are eatable, are sought for by birds, especially pigeons, bulbuls and starlings, and by fruit-bats, which frequent the trees when in fruit in great numbers, and distribute the seeds everywhere. The common Malay name for any species of *Ficus* is "Ara." "Sipadik" is applied to many scandent species, and "Kelampong" to such trees as bear the figs clustered on the stem. Most of the trees are of rapid growth with soft valueless timber.

F. pisifera Wall. Small tree, figs white, common, Bukit Timah, Bukit Mandai, Pulau Ubin.

F. urophylla Wall. "Ara Supudeh." A shrub, often epiphytic on other trees and sometimes killing them, figs small orange. Very common, Tanglin, Bukit Timah, Chan Chu Kang.

(*F. bengalensis* L. A big tree, often planted.)

F. bracteata Wall. A medium sized tree, figs orange. Not rare near the sea, Changi, Batu Puteh, Chua Chu Kang.

F. annulata Bl. Climber or tree, figs large and orange. Rare, Bukit Timah.

F. globosa Bl. A bushy tree, figs dark green, common in thickets, Bukit Timah, Bukit Mandai, Changi, Toas, Reservoir.

F. xylophylla Wall. A small tree or epiphyte, figs 2 inches long orange with darker spots, very handsome. Not rare, Galang, Bukit Timah, Changi, Selitar.

F. obtusifolia. Rare, Pulau Ubin.

F. altissima Bl. Big tree. Garden jungle, Serangoon.

F. consociata Bl. Var. *Murtoni.* A tree or large shrub, figs orange. Not rare on the coast, Changi, Selitar, Ponggol, Bukit Timah.

F. procera Bl. A big tree. Fort Canning, Changi.

F. microstoma Wall. Not seen. Singapore, Wallich 4566.

F. indica var. *Gelderi.* An epiphyte or tree. Selitar, Pulau Ubin.

F. sumatrana. Tree. Chan Chu Kang.

F. acamptophylla Miq. Big tree, not rare, Bukit Timah, Changi, Kranji, Bajau, Serangoon.

F. binnendykii. Mangrove swamps, Jurong, Kranji, Tampenis.

F. obtusifolia Roxb. Rare, Pulau Ubin (Hullett).

F. Benjamina L. "Waringin." Commonly cultivated.

F. glabella Bl. Big tree, figs small white with pink spots. Chan Chu Kang, Bedok, Bukit Timah.

F. retusa var. *nitida.* Tree. Galang, Changi, Bajau.

(*F. religiosa* L. Commonly planted.)

F. pisocarpa Wall. A big tree. Government House Grounds, Tanglin, Changi, Chan Chu Kang.

F. callicarpa Miq. A big climber with flattened stem, figs very large, pear-shaped orange with paler spots, very showy. On big trees, common, Bukit Timah, Chan Chu Kang.

F. punctata Thunb. Slender climber on old stumps. Tanglin, Chan Chu Kang, Selitar, Tanjong Gol.

F. apiocarpa Miq. Strong climber, figs pear-shaped large orange red. Tanglin.

F. obscura Bl. Figs yellowish white. Not rare, Bukit Timah, Chua Chu Kang.

F. lævis Bl. Rather rare, Bukit Timah, Pulau Ubin (Hullett), Chua Chu Kang.

F. recurva Bl. var. *ribesioides*. Bajau, Sungei Morai, Kranji, Chan Chu Kang.

F. ramentacea. Climber with yellow milk, figs bright pink. Dense woods, Bukit Timah, Chan Chu Kang.

F. villosa Bl. Climber, figs red or yellow, hairy. Tanglin, Bukit Timah, etc. Very common.

F. diversifolia Bl. Small shrub, terrestrial in sandy spots or epiphytic in mangrove swamps. Var. *ovoidea*. Very common, Changi, Kranji, Sungei Buluh, Teban, Selitar, Pulau Tekong.

F. Miquelii King. Medium to large tree, figs green with whitish spots, at length dull red in clusters on the stem. Very common, Tanglin, Bukit Timah, Bukit Mandai.

F. ribes Reinwdt. Singapore, Wallich; not seen.

F. fistulosa Reinwdt. Bukit Timah, Changi, Chan Chu Kang Pulau Ubin.

F. glandulifera Wall. Tree with spreading crown, figs yellow. Not very rare, Garden jungle, Changi.

F. alba Reinwdt. A shrub leaves lobed and large when young smaller and entire in older trees, white beneath, figs, yellow, becoming red. Very common in open country.

F. chrysocarpa Reinwdt. A small shrub with rough leaves and golden hairy figs. Common in open country everywhere. Dr. King calls this 10 to 30 feet tall, and distinguishes it from *F. hirta* by the latter being small and having lobed leaves. I have never seen this more than 5 or 6 feet tall, and the leaves are never lobed.

F. chartacea Wall. A very slender shrub with very small yellow figs. The bark is used for string. Common in thick woods, Garden Jungle, Changi, Bukit Mandai.

Artocarpus rigida Bl. "Tampunei." Monkey Jack. A very fine large tree with round yellow fruits covered with short spines and enclosing numerous seeds embedded in an orange colored sweet pulp. An excellent fruit. Tanglin, Changi, Chan Chu Kang.

A. Kunstleri King. "Getah Terap." A large tree, very variable in the shape of its leaves in young trees deeply lobed, in adults ovate oblong entire. The best is used for cordage, and as clothing by the Sakais. The milk is used as birdlime. Common all over Singapore.

A. Lowii King. Rare. Bukit Timah.

A. Maingayi King. Rare, Toas.

A. Scortechinii King. Not rare, Garden jungle, Kranji.

A. lanceæfolia Roxb. "Keledang." A very large tree with excellent timber. Not common, Tanglin, Changi.

A. Lakoocha Roxb. "Tampang Ambong." Not rare, Bukit Timah, Chan Chu Kang, Tanglin, Changi, Pulau Ubin.

A. Gomeziana Wall. "Tampang." A medium sized tree. Fruits smooth round, yellow and shining outside, inside rose pink, eatable but sour.

A. peduncularis King. Rare, Bukit Mandai.

A. integrifolia L., the Jack, "Nangka;" *A. incisa* L., Bread fruit: and the "Sukun" said to be a variety of it; and *A. polyphema* Pers., the Champedak, are cultivated. The latter may possibly be wild at Changi.

A. sp. Large tree with pinnate leaves and fruit like that of *A. rigida*, probably undescribed. Garden jungle, Pulau Ubin, Bukit Timah.

A. sp. Medium sized tree with small leaves, and small green fruits with white flesh 1½ inch long, seeds few Garden jungle.

Conocephalus suaveolens Bl. A big scrambling shrub with large leaves and compact heads of dirty white flowers, smelling of pears. Not rare, thick jungles, Bukit Timah, Bukit Mandai, Pulau Ubin.

C. amœnus King. Flowers pink. Dense jungles, Selitar, Pulau Ubin.

C. Scortechinii King. Singapore, Maingay, and *C. subtrinervius* Miq. collected by Lobb, probably erroneously localised.

Fleurya interrupta Gaud. A weed, sometimes stinging. Tanglin.

(*Pilea muscosa* Lindl. Introduced, common in waste spots in gardens, etc.)

Pouzolzia indica L. and var. *angustifolia.* "Ubai-Ubai." Used as a vegetable by the natives. A low weed, not very common, Bukit Timah, Chan Chu Kang.

P. pentandra Benn. A common weed, Tanglin, etc.

Pellionia javanica Wedd. "Singapore Lobb," doubtless an error for Penang.

Elatostema molle Wedd. Singapore, Wallich 4633; probably an error for Penang.

Pipturus mollissimus Wedd. Shrub. Rare, Toas.

JUGLANDEÆ.

Engelhardtia Wallichiana Lindl. Tree with winged fruits. Rare, Garden jungle.

E. serrata Bl. Rare, Changi.

MYRICACEÆ.

Myrica Nagi Thumb. "Gilinche." A small tree with dark green leaves and very small red drupes, much smaller than those figured in the Botanical Magazine t. 5727. Common on the sea coasts, Toas, Changi, Jurong, Blakang Mati; rarer inland, Bukit Timah.

CUPULIFERÆ.

Oaks and chestnuts are very abundant in Singapore, and are usually fairly large trees, the timber however is usually remarkably poor and valueless. When in flower, the small green blossoms are visited by myriads of small blue-bottle flies, with red heads. The fruits are sought for and dispersed by squirrels.

Quercus oidocarpa Korth. Not common, Garden jungle.

Q. Wallichiana Lindl. Jurong, Changi.

Q. spicata var. *gracilipes*. "Berangan Padi." Bukit Timah, Pulau Ubin.

Q. sundaica Bl. "Mempening Bagan." Not rare, Changi, Tengah.

Q. Lamponga Miq. Our commonest spacies. A medium sized tree with leaves silvery on the back. Very common, Tanglin, Changi, Chan Chu Kang. A form passing into *Q. Ewyckii* occurs in many spots. Selitar, etc.

Q. hystrix Korth. "Mempening." Common Bukit Timah, Kranji, Chan Chu Kang, Toas.

Q. conocarpa Oudem. Common, Garden jungle, Reservoir, Changi.

Q. Bennettii Miq. Rare, Garden jungle, Bajau.

Q. Cantleyana King. Common, Tanglin, Bukit Timah, Chan Chu Kang.

Q. lucida Roxb. Common, Changi, Selitar, Bukit Mandai.

Q. encleisocarpa Korth. A big tree, acorns almost completely enclosed in the very thin cup. Common, Tanglin, Bukit Timah, Changi.

Q. cyclophora Endl. with very large disc-like acorns. Singapore, Wallich; not seen.

Castanopsis javanica De C. "Katek Tanga." "Berangan Gajah." A big tree with very large spiny chestnuts, uneatable. Common, Tanglin, Changi.

C. Wallichii King. Garden jungle, Bukit Timah, Chan Chu Kang. Changi, common.

C. hystrix Dr C. Rare, Toas.

C. Hullettii King. Involucre without spines but stout ridges on them. Nuts eatable and good. Garden jungle, Bukit Timah, Sumbawang, Bukit Mandai.

C. sp. Like the last, but the involucres are spiny, and leaves smaller. Garden jungle, Changi.

C. nephelioides King. Rare, Bukit Timah, Pulau Damar.

C. sumatrana De C. Singapore, Wallich 2762; not seen.

CASUARINEÆ

Casuarina equisetifolia Forst, "Ru", is often planted, and was possibly wild here formerly.

CONIFERÆ.

Dacrydium elatum Wall. "Singapore, Schomburgk" in Flor. Brit.Ind, must have been of course from a garden. The tree does not occur wild at much less than 2,000 feet altitude in the peninsula.

Podocarpus neglectus Bl. "Sintada." Common in mangroves, and all round the island, Kranji, Changi, Jurong, Serangoon.

P. neriifolia Don. Sea coasts, Changi.

Agathis loranthifolia Salisb. Very rare, a few young plants in a wood near Changi. This Damar tree is usually to be met with only at an altitude of about 2000 feet in these latitudes, but both at Changi, and in the low country of Siak, Sumatra, I have found small plants growing far in the jungle.

GNETACEÆ.

Gnetum neglectum Bl. A big climber, fruit apricot color. Common in forests, and in woods near the sea. Garden jungle, Chan Chu Kang, Kranji, Bajau, Pulau Tekong.

G. macrostachyum Hook. fil. Not rare, Bukit Timah, Changi, Jurong, Selitar.

G. funiculare Bl. A big climber, the bark used for making string. Common, Tanglin, Sumbawang, Kranji.

G. edule Bl. Rare, near Selitar.

CYCADACEÆ.

Cycas Rumphii Miq. Sandy spots by the sea. Changi, Toas.

MONOCOTYLEDONES.

HYDROCHARIDEÆ.

Hydrilla verticillata Casp. A common water weed in ditches Tanglin, Chan Chu Kang.

Blyxa malaccensis Ridl. An aquatic with grassy leaves. Tanglin, Chan Chu Kang.

Enhalus Koenigii Rich. "Setul." A marine plant with long strap-like leaves. The male flowers are very small and white, borne in a pair of large green boat-shaped bracts on the end of a long stalk. When fully developed the inflorescence rises to the surface, and the flowers break off and float away till they come in contact with a female flower which they fertilise. The sea is sometimes sprinkled all over with them. The female flowers are solitary in the bracts. After fertilization the stalk contracts into a spiral and the fruit is drawn down to the bottom of the sea to ripen. It is ovoid, green and hairy, about 1½ inch long. Malay children eat it. The Dugong (*Halicore*) lives mostly on the leaves of this plant. It is very abundant in shallow bays in the Johore Strait, round Blakang Mati and wherever the sea is shallow enough for it.

Halophila ovata Gaud. A small creeping marine plant with obovate leaves. Abundant in shallow bays in mud. Changi, Blakang Mati.

BURMANNIACEÆ.

Burmannia coelestis Don. "Sisik Naga." A slender little plant with blue urn-shaped flowers, in grassy spots, common. Tanglin, Pasir Panjang, Mt. Faber.

B tuberosa Becc. A small white saprophyte, usually almost completely buried in the ground. Flowers white with yellow corolla lobes, scented of cowslips. Damp jungle in rotten leaves, Chan Chu Kang, Bukit Timah, Bukit Mandai.

Thismia Aseroe Becc. A saprophyte, with urn-shaped flowers, the perianth lobes drawn out into tails yellow. Decaying leaves in wet jungles. Fairy point, Changi (Beccari), Bukit Timah, Kranji.

Th. fumida Ridl. * Somewhat like the last but smoky grey. Rare, Chan Chu Kang.

Gymnosiphon borneense Becc. An exceedingly fragile little plant, with lavender flowers. Dense jungles in rotten leaves, Bukit Timah, Chan Chu Kang.

ORCHIDEÆ.

Oberonia. Small epiphytic orchids with ensiform distichous leaves and slender spikes of very small green, yellow or red flowers.

O. dissitiflora Ridl. * Mangroves, Kranji.

O. lunata Lindl. On a high tree, Selitar, Bukit Timah.

O. anceps Lindl. Galang, Kranji.

O. miniata Lindl. "Singapore cultivated in Loddiges Garden," has not been seen here of late years, and is probably an error of locality.

O. ciliolata Hook. fil. Mangrove swamps and orchard trees. Kranji, Chan Chu Kang, Changi, Sungei Morai, Bukit Timah.

Microstylis. Terrestrial orchids, with the stems usually swollen at the base, thin-textured leaves, and small red green or yellow flowers.

M. micrantha Hook. fil. A creeping plant with a rather long cylindric stem, and lanceolate copper colored leaves, which "sparkle like the stone avanturine." Flowers very small red and yellow. On dead leaves, Bukit Mandai, Changi, Selitar.

M. congesta Rchb. f. Stem swollen at the base, flowers pink or green. Common in woods, Bukit Timah, Kranji, Sungei Pandan.

Liparis venosa Ridl. The finest in the genus. Flowers fairly large, petals and sepals pink, lip with dark red veins. Terrestrial. Woods, very rare. Chan Chu Kang.

L. nervosa Lindl. Flowers yellow or purple. Terrestrial in swamps among grass in water Changi, Ang Mo Kio, near the Reservior, Tanglin.

L. elegans Lindl. Epiphytic, with stiff leaves, and racemes of small yellow flowers with a red lip. Common on old stumps and trees near the sea. Selitar, Kranji.

L. disticha Lindl. Epiphyte. The flowers crowded to the end of the raceme with distichous bracts; small, opening one at a time, apricot colored. Common. Mangrove swamps. Kranji, Chan Chu Kang, etc.

Platyclinis longifolia Hemsl. Epiphyte, forming large tufts, with conical pseudobulbs, long narrow leaves and long nodding spikes of brown flowers. It is easy to cultivate, and flowers all the year. Dry woods near the sea, Kranji, Sungei Jurong.

Dendrobium longicolle Lindl. * Epiphytic, forming a tuft of long slender pseudobulbs, bearing one leaf apiece, flowers solitary on long stalks with long filiform petals and a yellow lip. Rare, growing with the last. Sungei Morai. First discovered by Cuming.

D. (Bolbidium) pumilum Roxb, A little tufted plant with two leaves to each stem and one or two small flowers, yellow or veined with purple. Not rare on trees. Mangrove swamps, orchards, etc. Kranji, Bajau, Selitar.

D. (Sect. *Desmotrichum*) *lonchophyllum* Hook. fil. Stems branched and swollen at intervals. Flowers small and fugacious, yellow with pink stripes. Common all over Singapore.

D. criniferum Lindl. Flowers yellow spotted purple, lip with many yellow filaments on the end. Mangroves. Kranji, Sungei Morai, Changi.

D. Kunstleri Hook. fil. Flowers cream color with pink spots Bukit Timah, Kranji, Changi.

D. pallidiflorum Ridl.* Flowers yellowish white. Rare. Kranji.

D. laciniosum Ridl.* Flowers yellowish. Rare, Pulau Selitar.

D. (Sect. *aporum*) *Serra* Lindl. Stems flat covered with opposite distichous triangular leaves sometimes red, flowers very small, white. Common, Kranji, Changi, etc.

D. sinuatum Lindl. Stems as the last, but leaves longer; flowers orange small. Common, Selitar, Kranji.

D. eulophotum Lindl. Flowers yellow striped red. Common, Kranji, Bajau.

D. rhizophoreti Ridl. Mangroves, Kranji, Sungei Buloh.

D. atropurpureum Miq. Flowers brownish red or yellow. Common, Tanglin, Kranji.

D. Leonis Rchb. f. A stout plant with triangular dull green flat leaves and fairly large yellowish flowers spotted red, scented of vanilla. On trees, common, Tanglin, Selitar. Bukit Timah.

D. prostratum Ridl. A smaller plant than the last, creeping on the trunks. Mangrove swamps. Kranji, Selitar, Sungei Blakang.

D. (Sect. *strongyle*). This section has slender stems with terete curved leaves.

D. teres Lindl. Stems a foot tall, flowers white, an orange spot on the lip. Pretty but rare, on high trees, Toas.

D. junceum Lindl. "Singapore Hort. Loddiges;" probably an error.

D. aciculare Lindl. "Singapore," probably an error.

D. subulatum Hook. fil. A small tufted plant, flowers white with pink veins. Bukit Timah, Bukit Mandai, Selitar.

D. acerosum Lindl. Common, Kranji.

D. flexile Ridl. Rare, Bukit Timah.

D. (Sect. *Virgatæ*) *conostalix* Rchb. f. Terrestrial, growing in water, with slender erect stems grassy leaves and small brown flowers. "Rumput Raja Sari." Changi, Bukit Mandai.

D. villosulum Wall. Like the last but hairy. On leaves in dry woods, Bajau, Sungei Buloh, Kranji.

D. (Sect. *Bambusaefoliæ*) *gemellum* Lindl. Epiphyte with long slender stems and pale yellow flowers. Common in mangrove swamps.

D. pensile Ridl. A very curious plant with long hanging stems, fleshy leaves and yellow flowers in pairs. Mangroves, Selitar.

D. (Sect. *clavata*) *tuberiferum* Hook. fil. Rare, Selitar, Toas.

D. crumenatum Sw. The "pigeon orchid." Very common all over Singapore.

D. (Sect. *distichophylla*) *bifarium* Lindl. A small plant with pale yellowish white flowers. Not rare, Tanglin, Toas, Selitar, Serangoon.

D. pandaneti Ridl. A curious plant with long creeping stems and grassy leaves, flowers fawn color and white. It always grows on Pandans, or Sagos, or Coconut palms, climbing up the stems. Bukit Mandai, Jurong.

D. (Sect. *breviflores*) *callibotrys* Ridl. * A pretty plant with bunches of white flowers with a red and yellow lip, sweet scented. Rare, Toas, Sungei Morai.

D. euphlebium Rchb. f. Mangrove swamps, Kranji, Selitar, Toas.

D. flavidulum Ridl. A tall slender plant with yellow or whitish flowers. Kranji, Jurong. Mangrove swamps.

D. (Sect. *Pedilonum,*) *pyropum* Ridl. A tall plant with bright orange flowers, fairly large. Very rare, Chua Chu Kang.

D. lamellatum Lindl. An odd plant with ovate flat thin stems and white flowers turning yellow. Damp woods, rare, Changi.

D. (Sect. *speciosa*) *Dalhousieanum* Wall. This well-known and grand plant has once been found on a big fallen tree in the forest at Chan Chu Kang.

Bulbophyllum macranthum Lindl. Flowers fairly large pink, spotted, scented of cloves. Common in woods.

B. patens King. Like the last but smaller. Chan Chu Kang.

B. rugosum Ridl.* Flowers yellow. Not common, Chan Chu Kang.

B. pileatum Lindl. Selitar.

B. striatellum Ridl.* Flowers very small, yellow. Not common, Chan Chu Kang.

B. catenarium Ridl. Abundant on mangrove trees. Sungei Buloh, Changi, Selitar.

B. avicella Ridl. On mangroves common, Kranji, Bajau.

B. clandestinum Lindl. Common on trees, Kranji, Tanglin, Sungei Morai, Selitar.

B. concinnum Hook. fil. Flowers small flame-colored. On mangroves abundant, Kranji, North Selitar.

B. vermiculare Hook. f. An inconspicuous little plant with greenish white flowers. Mangroves, Kranji, Selitar, Changi.

B. adenopetalum Lindl. "Singapore Hort. Loddiges;" is probably an error. It has never been found here again.

B. apodum Hook fil. Flowers small yellow in spikes, floriferous. Common, Kranji, Selitar.

B. botryphorum Ridl. Forms large tufts on trees, flowers in small pendulous bunches, purple. Mangroves, Kranji, Toas, Sungei Buluh.

B. densiflorum Ridl.* A large long-leaved plant, flowers in bunches purple. Trunks of trees in woods. Selitar, Choa Chu Kang, Bukit Timah, Kranji.

B limbatum Lindl. "Singapore, Loddiges;" locality doubtful.

B. Trifolium Ridl.* A curious plant with pink flowers in a bunch like clover. Rare, Sungei Morai.

B. stella Ridl. Flowers on a long slender stem in a terminal raceme opening singly at intervals, large yellowish and pink on trees in thick jungle. Bukit Mandai, Jurong, Choa Chu Kang.

Cirrhopetalum Medusæ Lindl. Flowers in a dense mop-like head, with long tails to the sepals, white with pink spots. Stems and branches of trees in jungle often very high up, or on rocks. Tanglin, Galang, Bukit Timah, Chan Chu Kang, Pulau Ubin.

C. vaginatum Lindl. Flowers pale yellow. On trees, common.

C. concinnum Hook. fil. Flowers cream with pink spots or entirely pink. Common, Bajau, Kranji, etc.

C. gamosepalum Griff. Common, Bajau, etc.

C. acuminatum Ridl.* Rare, Choa Chu Kang.

C. microbulbon Ridl.* Rare, Sungei Buloh.

C. linearifolium Ridl.* Kranji, Bukit Mandai, Chua Chu Kang.

C. semibifidum Ridl.* Rare, Kranji.

C. makoyanum Rchb. f. Rare, Chan Chu Kang.

C. citrinum Ridl. Flowers yellow. Kranji, Tanjong Gol.

C. Blumei Lindl. Mangrove swamps, Kranji, Chan Chu Kang.

Eria obliqua Lindl. A small plant with little white flowers. Mangroves, Kranji.

E. floribunda Lindl. Flowers in dense spikes white with pink lips, pretty common. Mangroves, Kranji, Sungei Buloh, Sungei Morai.

E. tenuiflora Ridl. Flowers thin yellow. Sungei Morai, Toas.

E. bractescens Lindl. Trees, usually near the sea. Chan Chu Kang, Pulau Tekong, Pulau Selitar.

E. pudica Ridl. Rare, Changi.

E. endymion Ridl. Flowers white, sides of lip purple. Rare, Selitar.

E. nutans Lindl. Common, Selitar, Toas, Kranji.

E. neglecta Ridl. Common, Kranji, Selitar, Sungei Buluh.

E. longe-repens Ridl. Not common, Sungei Morai.

E. pulchella Lindl. Common on trees or rocks. Kranji, Pulau Tekong, Sungei Morai.

E. pannea Lindl. On trees. Common, Kranji, Chan Chu Kang.

E. stellata Lindl. Rare, Choa Chu Kang.

E. striolata Rchb. f. Rare, Kranji.

E. vestita Lindl. Not uncommon, Kranji, Sungei Brih, Sungei Morai.

E. oligantha Hook. fil. Local, Toas.

E. velutina Lindl. Common, Sungei Morai, Kranji, Jurong.

Phreatia minutiflora Lindl. A very small plant with minute white flowers. Common in mangroves. Kranji, Toas, Jurong.

Agrostophyllum majus Hook. fil. Common, Kranji, Selitar.

Spathoglottis plicata Bl. A terrestrial orchid with pink flowers very common in open country and on damp rocks. Tanglin, Bukit Timah, etc.

Nephelaphyllum pulchrum Bl. Terrestrial. Damp woods, Bukit Timah, Bukit Mandai, Sungei Brih.

Plocoglottis porphyrophylla Ridl. Terrestrial, leaves purple. Local, Kranji, Toas, Selitar.

P. javanica Bl. Terrestrial, flowers red and yellow. Woods, local. Chan Chu Kang, Choa Chu Kang.

P. foetida Ridl. Wet woods. Bukit Timah.

Claderia viridiflora Hook. fil. A creeping plant climbing up trees. Flowers large green. Common, Garden jungle, Bajau, etc.

Cœlogyne testacea Lindl. Sandy places near the coast on trees and stumps or on the ground. Kranji, Chan Chu Kang, Sungei Morai.

C. Rochussenii De Vr. Not common, Selitar.

C. Cumingii Lindl. Bukit Timah, on high trees.

C. Mayeriana Rchb. f. Flowers green and black, on palm trees near the sea. Very local, Sungei Buluh, Kranji, on high trees, Bukit Timah.

Calanthe curculigoides Lindl. A beautiful terrestrial plant, with apricot orange flowers with red lips, in a dense spike. Common, Choa Chu Kang, Kranji, Toa Payoh, Bukit Timah.

Dilochia Wallichii Lindl. Singapore (Wallich No. 1952), has never been found again in the peninsula.

Eulophia squalida Lindl. Terrestrial, flowers pink and green. Open grassy spots, common. Tanglin, Changi, Chan Chn Kang.

E. graminea Lindl. "Bawang hantu." Common in sandy spots. Tanglin, Choa Chu Kang, Chan Chu Kang.

Cymbidium aloifolium Sw. Epiphytic. Common on the island and Pulau Ubin.

var. *pubescens* less common, Sungei Buluh, Jurong.

Grammatophyllum speciosum Bl. Rare, Toas, Pulau Ubin.

Dipodium pictum Rchbf. Climbing on small trees, in woods. Common, Kranji, Chan Chu Kang.

Bromheadia palustris Lindl. Open grassy and sandy spots, very common. Flowers white lip pink and yellow. Sweet-scented.

B. sylvestris Ridl. In dense woods, local. Kranji, Changi, Toas, Sungei Morai.

B. alticola Ridl. On high trees, common, Bukit Timah, Bukit Panjang.

B. aporoides Rchb. f. On lofty trees. Bukit Timah, Selitar.

Polystachya singapurensis Ridl. * On trees near mangrove swamps, rare, Sungei Morai.

Adenoncos virens Bl. A small epiphyte with green flowers. Common on mangroves, Kranji.

Renanthera alba Ridl. Local, Pulau Selitar and other islands round the coast.

R. elongata Lindl. Rocks, Pulau Ubin; Roadside, Bukit Timah.

R. Maingayi Hook. fil. Pulau Selitar.

Renantherella histrionica Ridl. Rare. Mangroves, Serangoon.

Rhynchostylis gigantea Ridl. Very rare, one plant on a tree at Selitar.

Saccolabium perpusillum Hook. fil. A very small plant with minute white flowers. Common in mangroves, Kranji, Sungei Buluh.

Microsaccus javensis Bl. Mangroves, Kranji.

Tæniophyllum serrula Hook. f. A leafless epiphyte with long roots and small yellow and white flowers. Common, mangroves, orchard trees, etc. Tanglin, Toas, Kranji, etc.

Cleisostoma latifolium Lindl. Singapore, according to Lindley. Not seen.

C. spicatum Lindl. ? (*non aliorum*). A common plant in the Peninsula. I am doubtful as to its identification with Lindley's plant. Not common, Jurong.

Sarcanthus halophilus Ridl. On trees by the sea, common, Kranji, Sungei Morai, Sungei Tengeh, Pulau Tekong.

S. densiflorus Par. *S. castaneus* Ridl. Rare, on a tree, Dalvey road. This is figured by Dr. King, Ann. Bot. Gard. Calcutta Pl. 83 under the name of *Cleisostoma spicatum*, but it is not a *Cleisostoma* at all, as I understand the genus. Lindley's original description of *C. spicatum* is very short, but he says the flowers are pilose and the lip is longer than the spur, which does not apply to this plant.

Sarcochilus caligaris Ridl. On tree trunks in dense woods. Bukit Timah, Chan Chu Kang.

S. adnatus Ridl. Very rare, Toas.

Thrixspermum lilacinum Rchb. fil. Scrambling among bushes and grass in swamps. Flowers lilac or white. Common, Selitar, Changi, Ang Mo Kio, Balestier plain.

Th. calceolus Rchb. f. Grows in great masses on the ground or on trees. Flowers white sweet fugacious. Common; Kranji, Sungei Morai, Bukit Timah Road, Pulau Ubin, Pulau Tekong.

T. arachnites Rchb. f. On trees, flowers yellow dotted red with very long tails to the sepals and petals. Rare, Selitar,

T. notabile Ridl.* Leaves dull red, flowers pink, on trees. Rare Chan Chu Kang, Bukit Mandai.

Dendrocolla maculata Ridl.* Rare, Bukit Mandai.

D. trichoglottis Ridl. Very common on orchards, and gardens. A small plant with fugacious yellowish flowers. Whole island.

D. filiformis Ridl. Leaves long slender terete, flowers white. On orchard trees, rare. Bukit Mandai, Chan Chu Kang, Dalvey road.

Acriopsis javanica Reinwdt. Epiphyte with slender panicles of pink flowers. Trees, open country. Very common, Tanglin, Changi, Kranji, etc.

A. Ridleyi Hook. fil.* Flowers yellow, very rare, one plant only found at Bukit Mandai.

Podochilus microphyllus Lindl. A small creeping epiphyte with white flowers, on mossy trees, common. Chan Chu Kang, Ang Mo Kio, Kranji.

Appendicula bifaria Lindl. Common on trees, Sungei Morai, Kranji, Bukit Timah.

A. callosa Bl. Very common, Bukit Timah, Sumbawang.

A. Lewisii Griff. Singapore (Wallich); not seen.

A. lucida Ridl. Mangrove swamps. Common, Kranji, Chan Chu Kang.

Thelasis elongata Bl. Common, mangroves, Kranji, etc.

Oxyanthera elata Hook. f. Mangroves, common, Kranji, Sungei Buluh.

O. decurva Hook. fil. Common, mangroves, Serangoon, Selitar, Kranji.

Galeola. Curious saprophytes with long straggling yellow branches, no leaves, and white or yellow flowers, growing among long grass or over stumps or tree trunks, or even over native huts.

G. altissima Rchb. f. Not common, Chan Chu Kang.

G. hydra Rchb. f. Krangi, Sungei Buluh.

Vanilla Griffithii Rchb. f. Flowers white, fruit sweet, not vanilla scented. Local. Pulau Ubin.

Corymbis longiflora Hook. fil. A tall leafy plant about six feet tall with sweet white flowers. Damp woods. Pulau Ubin, Choa Chu Kang.

Vrydagzynea albida Bl. A small ground orchid, flowers white. Damp woods. Chan Chu Kang, Bukit Mandai, Choa Chu Kang.

V. lancifolia Ridl. Local, Bukit Timah.

V tristriata Ridl. * A very small plant, leaves reddish olive with 3 pink stripes. Very wet spots in jungle, rare, Chan Chu Kang.

Macodes Petola Lindl. Leaves bright green with gold veins. Rare, Selitar.

Cystorchis variegata Bl. Leaves apple green with darker markings. Common in wet woods. Chan Chu Kang, Bukit Timah, etc.

var. *purpurea*. Leaves purple. Choa Chu Kang.

Hylophila mollis Lindl. Wet woods, common. Chan Chu Kang, Choa Chu Kang, Bukit Timah, Kranji.

Hetæria obliqua Bl. Rare, Bukit Timah.

Aphyllorchis pallida Bl. A leafless saprophyte, straw color. Not rare, Tanglin, Reservoir woods, Bukit Timah.

Anæctochilus geniculata Ridl. Leaves deep red with gold veins, Woods, Toas, Chan Chu Kang, etc.

Cryptostylis arachnites Bl. Rare, Bukit Timah, Pulau Damar.

Pogonia punctata Bl. Rare, Bukit Timah.

Didymoplexis pallens Griff. Leafless purplish saprophyte. Not common, Chan Chu Kang, Bajau.

Lecanorchis malaccensis Ridl. A black wiry leafless plant with pinkish flowers. Common in woods, Bukit Timah, Bajau, etc.

Gastrodia javanica Lindl. Rare, Chan Chu Kang, Bukit Mandai.

Habenaria singapurensis Ridl. * Very rare, Choa Chu Kang woods.

H. lacertifera Benth. Small white flowered ground orchid. Common along paths, in grass, etc. Whole island.

H. Maingayi King. * "Singapore Maingay." I have not seen this, and hardly see how it differs from the last, which is a somewhat variable plant.

APOTASIACEÆ.

Apostasia nuda R. Br. Shrubby plant with narrow leaves and small white flowers. Very common in dry woods, Bukit Timah, etc.

Neuwiedia Lindleyi Rolfe. A tall handsome plant with bright yellow flowers. Not rare, Bukit Timah, Chan Chu Kang, Chua Chu Kang.

N. Curtisii Rolfe. Rare, Changi, Kranji. This is the *Tupistra singapuriana* of Wallich's Catalogue.

N. Griffithii Rchb. f. Stems creeping, flowers white. Wet spots. Bukit Timah, Bukit Mandai, Sungei Morai, Chan Chu Kang, Jurong.

SCITAMINEÆ.

The Gingers have already been described in a previous number of the Journal.

Globba panicoides Miq. Woods, Bukit Timah, etc.

Gl. uliginosa Miq. Bukit Mandai.

Gl. leucantha Miq Bukit Timah, Chan Chu Kang.

Curcuma zedoaria Rosc. Abandoned gardens. Reservoir, Bukit Mandai, etc.

Costus speciosus Sm. Common, Jurong, Bukit Timah etc.
var. *argyrophyllus* Bukit Timah.

C. globosus Bl. Rocky places, Bukit Timah.

Zingiber zerumbet Sm. Waste ground.

Z. gracile Jack. Bukit Timah.

Z. puberula Ridl. Common, Bukit Timah, Serangoon, Bajau.

Z. Griffithii Bak. Bukit Timah.

Amomum hastilabium Ridl. Bukit Timah, Selitar.

Hornstedtia scyphus Retz. Common, Tanglin, Bukit Timah.

H. Leonurus Retz. Common. Tanglin, Bukit Timah, Bukit Panjang.

H. megalochilus Ridl. Rare, Bukit Mandai.

H. conica Ridl. Rare, Bukit Panjang.

H. Maingayi Ridl. Local, Bukit Timah, Sungei Buluh.

Plagiostachys lateralis Ridl. Local, Bukit Timah, Bukit Mandai, Reservoir woods.

Elettariopsis latiflora Ridl. Common, Bukit Timah, Kranji, Sungei Buluh.

Alpinia melanocarpa Ridl. Sandy spots near the sea. Kranji, Selitar.

A. Galanga L. Waste ground and gardens.

A. Rafflesiana Wall. Not common, Sungei Buluh, Changi, Toas.

Donax grandis Ridl. Bukit Timah, Bukit Panjang.

Phrynium Griffithii Bak. Common, Bukit Timah, Jurong.

(*Canna indica* L. and *C. Warcewiczii.* Garden escapes. Tanglin, etc.)

OPHIOPOGONEÆ.

Peliosanthes violacea Wall. Dense woods, Bukit Timah.

P. viride Ridl. Common, Chan Chu Kang, Ang Mo Kio.

AMARYLLIDEÆ.

Curculigo recurvata Dryand. "Lumbah." Common in open country, Bukit Timah, etc.

C. latifolia Dryand. Very common and variable. All over the island.

C. villosa, Wall. *C. latifolia*, var. *villosa* Bak. This is a very distinct species from *C. latifolia.* The leaves are narrow lanceolate acuminate caudate stiff, glabrous above, cobwebby beneath 2½ feet long and 5 inches wide with a petiole one foot long. Spikes 2 inches long, bracts stiff oblong obtuse green, with the points recurved, something like the spike of a *curcuma*. Flowers ocre yellow ¾ inches across. Sepals lanceolate acute petals shorter and blunter. Fruit with beak one inch greenish white. Seeds few black about half as big as those of *C. latifolia* Dry. Not rare, in long grass and secondary growth. Bukit Timah, Tanglin, Chua Chu Kang.

Crinum asiaticum L. "Bakung." The common white sea shore *Crinum*. *C. pedunculatum* Br. is said to differ in the long-pedicelled flowers and elongate root stock. I have only seen one species in Singapore and Penang, and that has long pedicelled flowers and no root stock. The flowers open about 6 p. m. and are sweet scented, and very attractive to hawk-moths. Sea coasts, Kranji, Selitar, Pulau Ubin.

Eurycles sylvestris Salisb. Is probably native here. It occurs in the sea sand at Changi, Bajau, etc., and is often cultivated.

TACCACEÆ.

Tacca cristata Jack. Common in woods, Bukit Timah, etc.

DIOSCOREACEÆ.

Dioscorea dœmona Roxb. "Gadung." A fairly large climber with prickly glaucous stems. The tubers sliced and washed in running water are eaten, but unless so washed are stated to be poisonous. Common in villages; I have never seen it elsewhere.

D. pyrifolia Kunth. Common, Bukit Timah, Chan Chu Kang, Bukit Mandai, Sungei Pandan.

D. oppositifolia L. Garden jungle, Selitar, Bukit Mandai Road.

D. laurifolia Wall. Woods and edges of jungles, common, Tanglin, Sungei Morai, Bukit Timah, Changi.

D. deflexa Hook, fil. "Singapore Maingay"; not seen.

D. polyclades Hook. fil. Not common. Sungei Pandan.

D. glabra Roxb. Tanglin, Bukit Mandai.

D. sativa L. "Ubi Kistala." Waste ground and hedges, common.

(*D. alata* L. The yam is often cultivated.)

ROXBURGHIACEÆ.

Stemona tuberosa Lour. Not common, Bukit Timah.

LILIACEÆ.

Smilax calophylla Wall. A dwarf erect shrub with yellow flowers and red berries. Common in dense jungle. Garden jungle, Changi, Bukit Mandai, Bukit Timah, etc.

S. myosotiflora A. De C. Slender climber flowers green. Rare, Garden jungle, Chan Chu Kang.

S. megacarpa Roxb. Not common, Garden jungle, Bukit Timah.

S. barbata Wall. A strong climber with bristly stems. Common all over Singapore, Tanglin, etc.

S. leucophylla Bl. with large lanceolate acuminate leaves broad at the base, smooth unarmed stem, and large flowers in solitary umbels on stout peduncles 2 inches long. Rare. Tanjong Katong (Hullett), Bukit Mandai, Bukit Timah.

Dianella ensifolia Red. "Lenjuang." Herb, flowers yellowish and fruit white, or flowers and fruits blue. Common all over Singapore.

Dracœna granulata Hook. fil. A tree about 20 feet tall with stems about 4 inches through, leaves narrow and dark green, flowers white in large panicles. A beautiful tree. In Journ. Bot. Apr. 1896. I confused this with *D. graminifolia* Wall, a low shrub occurring in the Dindings. Wet jungles, Bukit Timah, Bukit Mandai, Choa Chu Kang.

D. terniflora Roxb. A low shrub. Common, thick jungles. Garden jungle, Selitar, Changi, Pulau Ubin.

D. Porteri Bak. Common in thick jungles. Garden jungle, Jurong, Chan Chu Kang, Pulau Ubin.

D. aurantiaca Wall. *D. Cantleyi* Bak. A shrub little or not branched, leaves green or purple with lighter rings. Flowers purple rarely white, fruit orange. Damp spots all over Singapore, common, Tanglin, Bukit Timah, Selitar, etc.

D. Maingayi Hook. fil. A big tree. Sandy spots near the sea. Changi, Sungei Morai, Bukit Panjang, Toas.

D. singapurensis Ridl.* Woods, Chan Chu Kang, Bukit Timah.

D. gracilis Wall. Common in jungles, Garden jungle, Chan Chu Kang, Bukit Mandai.

(*Cordyline terminalis*, the Dracæna of Gardens, is not wild anywhere in the peninsula, it is cultivated only.)

PONTEDERIACEÆ.

Monochoria hastæfolia Presl. Aquatic, flowers light blue. Common, Galang, Ang Mo Kio.

M. vaginalis Presl. Flowers dark blue. Common in ditches all over Singapore; the var. *plantaginea* is even commoner.

PHILYDRACEÆ

Philydrum lanuginosum Banks. Local. Wet sandy spots, Bedoh.

XYRIDEÆ.

Xyris anceps Lam. A tufted grassy plant with terminal cones of brown bracts, with fugacious yellow flowers. Sandy places, Balestier, plain Macpherson road, Changi, Pulau Tekong.

X. schœnoides Mart. Balestier plain, Reservoir.

COMMELINACEÆ.

Pollia sorzogonensis Endl. Herb, flowers white. Jungle, Pulau Ubin.

Commelina nudiflora L. "Rumput Aur." Common weed with blue flowers opening in the early morning and soon withering. Common all over Singapore.

C. benghalensis L. Weed in cultivated ground, flowers blue. Tanglin, Galang.

Aneilema nudiflorum Br. Small weed with pink flowers, waste ground, Tanglin.

A. vaginatum Br. Telok Kurau.

Forrestia mollis Hassk. "Setawa." A tall erect plant about, 4 feet high, with white flowers and pink capsules. Common in jungles, Bukit Timah, Tanglin, Tampenis, Reservoir, Pulau Ubin.

F. marginata Hassk. Stout creeping plant, flowers white. Capsule purple. Rocks, Bukit Timah.

Cyanotis cristata C. B. C. Sandy shores. Changi, Teluk Kurau.

Floscopa scandens Lour. Damp spots, Tanglin, Galang.

FLAGELLARIEÆ.

Flagellaria indica L. "Rotan Binni." Stems used for making baskets. Common in mangrove swamps and other places near the sea. Bajau, Changi, Pulau Ubin.
var. *minor* Jurong, Selitar, Bajau.

Susum anthelminticum Bl. Common in jungle. Bukit Timah, Chan Chu Kang.

PANDANEÆ.

Pandanus atrocarpus Griff. "Mengkuang." The biggest species here, often 40 feet high with very long leaves used for Kajangs, and ataps, baskets, hats, etc. Common all over Singapore, in swamps.

P. Houlletii Carr. About 15 feet tall, leaves large, dark red when young. Dense jungle, Bukit Timah.

P. fascicularis Lam. "Pandan Duri." A large much branched plant, with heads of fruit as large as a man's head, bright orange. Sea coasts, and often planted. The leaves used for mats and baskets. Common, Changi, Bajau, Blakang Mati, Pulau Ubin.

P. ornatus Kurz. A bush with narrow glaucous leaves. Bukit Timah.

P lævis Rumph. "Pandan Jelinkeh," with glaucous unarmed leaves, is often cultivated, the leaves used to flavour rice, and as a perfume.

P. parvus n. sp. *Pandanus* 15 Hook. Fl. Brit. Ind. Vol. vi. 487.

This has never been completely described nor named so I give a description of it here. Stem 3 feet tall or less, and ½ inch in circumference erect grey, emitting long slender roots from all parts often producing shoots at the base seldom branched higher up. Leaves a foot long and 3 inches wide abruptly caudate acuminate, the point 2 inches long very slender dull green above glaucous beneath rather thin in texture, spines very small numerous on the edges and keel at the apex, none on the keel at the base of the leaf. Male spadix six inches long, rachis white. Bracts oblong boat-shaped keeled mucronate lowest 4 inches long, the mucro one inch long in the two lowest bracts which are empty, the upper bracts smaller with the keel, edges, and point green and armed with short stiff spiny bristles. Flowering bracts 7, softer than the lower ones ivory white spinulose ovate to ovate lanceolate, the terminal one flat lanceolate barely ½ an inch long. Spikes 5 shorter than the bracts except the terminal one ¾ inch long. Stamens free very slender ⅛ inch long. Female spadix solitary globose about 1½ inch long carpels conic rather abruptly passing into a long brown shining upcurved spine nearly ¼ inch long.

Dry woods, common. Bukit Mandai, Bidadari, Changi, Kranji, Sungei Pandan, Pulau Ubin. Also occurs in Johore, Perak, Sungei Ujong and Malacca. This is a very distinct little species, and one of the smallest known to me. The male plants are very rare. I have only met with one, and have never seen ripe fruit.

Three other Pandans occur here which I cannot at present identify.

P. near *P. helicopus* Kurz. but with very short styles to the fruit, leaves broad and very thorny at the tip. Woods, Bukit Timah.

P. sp. Stems slender about 5 feet tall much branched, leaves narrow fruit cylindric 3 inches long and one inch through. Carpels small narrowed into a single curved spine. Streams, Bukit Mandai, Bukit Timah.

P. sp. A tall plant about 10 feet high, with long glaucous leaves $1\frac{1}{2}$ inch broad, tips deflexed. Fruits about 5 in a spike subglobose on a stout peduncle, each 3 inches long, carpels acuminate into a long spine conic, orange color. Forming large thickets in swamps near Bukit Mandai on the road to Kranji.

Freycinetia angustifolia Bl. A slender climber with narrow leaves, often covering trees like a mat. Spathes apricot orange. common, Garden jungle, Bukit Timah, Kranji.

F. Gaudichaudi Benn. Leaves broader spathes yellow. Common, Bukit Mandai, Bukit Timah, Kranji.

F. insignis Bl ? A very stout climber much bigger than the others. Thick woods. Garden jungle, Chan Chu Kang, Chua Chu Kang.

PALMÆ.

(*Areca Catechu* L. "Pinang." Betel-nut. Commonly cultivated, it does not seem to be known wild anywhere.)

Pinanga coronata Bl. Rare, Selitar.

P. disticha Bl. A dwarf palm with mottled leaves. Rather rare, Selitar.

P. Malaiana Scheff. A tall slender palm. Chan Chu Kang woods,

P. paradoxa Scheff.? Rare, Chan Chu Kang. The only specimen I have closely resembles this plant which is otherwise a native of our hills at 2,000 feet upwards.

P. polymorpha Becc. "Singapore Lobb;" doubtless an error for Penang.

Nenga Wendlandiana var. *Malaccensis*. "Pinang Umu." About 15 feet tall fruit black on a red spadix. Flowers cream colour. Wet woods common, Garden road, Chan Chu Kang.

Ptychoraphis singaporensis Becc. "Kerintin." A tufted palm about 10 feet tall. Abundant in dry woods, Garden jungle, Bukit Timah.

Cyrtostachys Lakka Becc. The sealing-wax palm. "Pinang Rajah." Wet places near the sea, common, Kranji, Toas, Chua Chu Kang.

Oncosperma horrida Scheff. "Bayas." A big thorny palm, common in dense jungle. Garden jungle, Bukit Timah.

O. tigillaria. Areca tigillaria Griff. "Nibong." Like the Bayas, but with drooping leaves, and smaller fruit. Quite distinct from the Javanese *O. filamentosa* Bl. which is made a synonym in Flor. Brit. Ind. The wood is used in building and for many other purposes. Common usually near the sea, Kranji, etc. The Malays distinguish several other species under the names of Lenou, Ibas, and Bayas Padi, but they do not seem to me to be specifically distinct.

Iguanura geonomæformis Becc. Not common. Streams in thick jungle, Bukit Timah, Bukit Mandai.

I. Malaccensis Becc. Rare, Chan Chu Kang.

I. Wallichiana Hook. fil. "Singapore Lobb"; evidently an error for Penang.

(*Arenga saccharifera* Labill. "Kabong," Sugar palm, is commonly cultivated.)

Caryota mitis Lour. "Tukus." Common in woods, Grange Road, Bukit Timah.

Orania macrocladus Mart. "Ebol." A noble palm about 40 feet tall. Rare in Singapore. Some trees at Chan Chu Kang. More abundant in Pulau Ubin.

Nipa fruticans Wurmb. "Nipah." Common in tidal mud, all round Singapore. I have found fruits of this in the swampy ground of the Botanic Gardens near Cluny road, showing that the Bukit Timah stream was formerly tidal and salt as far inland as this.

Phœnix sp. A few plants of a wild date occur scattered about round Singapore, at Toas and elsewhere, but I have never been able to get fruits or flowers.

Licuala ferruginea Becc. "Palas." A stem-less palm with orange colored flowers and pink fruits. Common in jungle, Garden jungle, Bukit Timah, Chan Chu Kang.

L. triphylla Griff. A very pretty dwarf species, local, thick woods, Changi.

L. spinosa Wurmb. Woods, Pulau Ubin.

L. acutifida Mart. "Singapore Lobb"; evidently an error for Penang.

Livistona Kingiana Becc. A tall palm about 40 feet or more with large fan shaped leaves. Dense woods, Choa Chu Kang, Toas, Kranji.

Calamus. The Rotans so extensively exported from Singapore belong to the genera *Calamus*, *Dæmonorops*, *Korthalsia*, *Ceratolobus* and *Myrialepis.* They inhabit dense forests climbing to the tops of trees by the aid of their thorny flagella or whips. These flagella are used to protect fruit-trees from bats, the natives attaching them to the branches and bunches of fruits in such a way that the bats tear their wings when they fly to the tree.

C. javensis Bl. "Rotan Lilin." A fine slender rattan, Kranji, Bukit Timah.

C. diffusus Becc. "Singapore Lobb." I know nothing of this.

C. Singaporensis Becc. Forest near the Botanic Garden, Murton. A very imperfectly known plant. I do not know it, and can find nothing like it there now.

C. pallidulus Becc. Rare, Jalan Bray.

C. Oxleyanus Teysm. Rare, Toas.

C. insignis Griff. Bukit Timah.

C. densiflorus Becc. Bukit Mandai.

C. Lobbianus Becc. A short-stemmed species, with dark green leaves with white backs, and curious black fruits. Bukit Timah, Selitar.

C. n. sp. near *radulosus*. Garden jungle, Bukit Mandai.

Dæmonorops grandis Mart. "Rotan Sumambu." Common, Garden jungle, Bukit Timah, Selitar.

D. hygrophilus Mart. "Rotan Sepat." Chua Chu Kang, Chan Chu Kang.

D. angustifolius Mart. Garden jungle, Changi, Selitar.

D. intermedius Mart. Garden jungle, Bukit Timah.

D. propinquus Becc. "Rotan Bakau." Kranji, Bukit Arang, Ang Mo Kio, Bukit Mandai.

D. didymophyllus Becc. Common, Bukit Timah, Changi, Toas, Selitar.

D. leptopus Mart. Bukit Timah, Selitar.

D. hystrix Mart. "Rotan Sabut." Very common, Garden jungle, Bukit Timah, Selitar.

D. geniculatus Mart. Bukit Timah, Toas.

D. longipes Mart. Chan Chu Kang, Bukit Timah, Mandai Changi.

D. cochleatus Teysm. Rare, Selitar.

D. crinita Bl. Not rare, but I have never seen flowers or fruits. "Rotan Chinchin," Bukit Timah, Chan Chu Kang.

D. accedens Bl. Chan Chu Kang.

Zalacca conferta Griff. "Asam Payoh." "Kelubi." A very thorny palm, common in water in jungles, forming close thickets, fruit very acid, sold and eaten by Malays. Cluny road, Chan Chu Kang, Bukit Mandai.

Z. Wallichiana Mart. Dryer woods. Bukit Timah, Bukit Mandai.

Korthalsia echinometra Becc. Climber with very large swollen sheaths inhabited by ants. Flowers and fruits unknown. Rare, Bukit Timah.

K. scaphigera Mart. "Rotan Semut." Common, Garden jungle, Bukit Timah. A good rattan.

K. flagellaris Miq. Bukit Mandai, Chan Chu Kang.

K. polystachys Mart. Bukit Timah.

Ceratolobus Kingianus Becc. Bukit Timah, Selitar.

Plectocomia Griffithii Becc. "Rotan Dahan." A very large stout rattan. The flowers produced in an enormous inflorescence of pendulous spikes 8 feet long with close dark brown sheaths enclosing the flowers, each plant is unisexual, and the flowering stems die away after flowering. Common in all the woods.

Myrialepis Scortechini Becc. "Rotan Kertong." Bukit Mandai, Selitar, Kranji.

The Sago palms *Metroxylon Sagus* Rottb. and *M. Rumphii* Mart., the "Lontar," *Borassus flabellifer* L., and the Coconut, *Cocos Nucifera L.* are cultivated here.

AROIDEÆ.

Cryptocoryne ciliata Fisch. Very abundant in tidal mud. Flowers very rarely produced, Kranji, etc.

C. Griffithii Schott. Aquatic in streams in the forests often almost blocking them. Spathes submerged up to the mouth, tube white, limb dark crimson pustular. Fruits pink. Common, Tanglin, Garden Road, Bukit Timah, Toa Payoh, Kranji, Choa Chu Kang.

Pistia stratiotes L. "Kiamban." The Water lettuce, is cultivated by the Chinese to feed pigs. Common in ditches.

Typhonium Roxburghii Schott. A weed in waste ground.

Amorphophallus Prainii Hook. fil. Bukit Timah.

A. sp. Leaf only seen. Reservoir, Bukit Timah.

Colocasia antiquorum L. "Keladi," and *Alocasia macrorrhiza* Schott and *A. indica* Schott are commonly cultivated, and occur as garden escapes. *A. cucullata* Schott occurs in waste ground in Tanglin, also doubtless introduced.

Alocasia denudata Engl. "Keladi Rimau." With hastate leaves deep green with paler nerves entire and peltate in seedlings, stem mottled with olive, is common in woods and banks all over Singapore.

A. longiloba Miq. "Singapore Wallich," is probably erroneously localised.

Aglaonema nitidum N. E. Br. with stems 1 to 2 feet tall and narrow deep green leaves at the top, is very common in dense woods. Bukit Timah, Chan Chu Kang, Changi, Pulau Ubin.

A. oblongifolium Schott. A stout plant with dark green leaves flecked with white. Common in swamps in the jungle. Chan Chu Kang, Bukit Mandai, Changi, Loyang.

A. minus Hook. fil. A dwarf species, leaves often mottled with paler color, or pale or dark green. Common in wet jungles. Garden Road, Kranji, Chua Chu Kang, Bukit Mandai, Bukit Timah.

Homalomena sagittæfolia Jungh. "Kelamoyiang." Dense swampy jungle, Selitar, Changi, Bukit Timah.

H. coerulescens Jungh. Common in jungles, hedges and banks. Tanglin, Changi, Bukit Timah, Kranji, Selitar.

H. paludosa Hook. fil. Wet swampy woods. Common, Kranji, Bukit Timah, Toas, Ang Mo Kio, Jurong.

H. pumila Hook. fil. A small plant leaves deep velvety green or purple according to locality. Common in woods, and very variable. Bukit Timah, Selitar, Reservoir woods.

H. Griffithii Hook. fil. Common in thick jungle, Bukit Timah, Bukit Mandai, Tanjong Gol, Selitar.

H. Kingii Hook. fil. Singapore, swamps (King). Not seen.

H. ovata Hook. fil. Singapore (Wallich). Not seen.

H. singaporensis Regel. An altogether doubtful plant, cultivated in Russia.

Schismatoglottis Wallichii Hook. fil. Dense jungle in ravines abundant. Bukit Timah, Chan Chu Kang.

S. longipes Miq. Leaves ovate cordate dark green with a light green bar running round the centre. Abundant, rocky ravines. Bukit Timah.

Anadendrum montanum Schott. Climbing on trees low down. Common, Garden jungle, Bukit Timah.

A. medium Schott. *Pothos bifaria* Wall. *Pothos celaticaulis* of Gardens. The young plant grows flat on trees and rocks with close set distichous velvety green leaves and has long been cultivated under the last name in Europe. This form gradually passes into the adult which has stalked lobed and perforate leaves like those of *Monstera*. Not rare, Bukit Timah, Jurong, Bida lari, Reservoir woods.

Scindapsus pictus Hassk. A well known ornamental climber with green leaves mottled with silver. Common in woods but rarely to be met with in flower. Bukit Timah, Chan Chu Kang.

Sc. hederacea Schott. Climber. Common thick woods, Bukit Timah, Sungei Buluh, Sungei Tengeh, Chua Chu Kang, Bidadari.

Raphidophora Lobbii Schott. Woods, Bukit Timah.

R. minor Hook, fil. Rare, Toas.

R. gracilipes Hook. f. ? Rare, Chan Chu Kang.

Epipremnum gigantium Schott. A strong creeper, with very large leathery leaves on trees and stumps common, Chan Chu Kang, Bedoh, Sungei Blukang.

Lasia heterophylla Schott. Tidal mud, also inland on muddy stream banks. Chua Chu Kang.

Cyrtosperma lasioides Griff. Common in marshes. Tanglin, Jurong, Chan Chu Kang, Bukit Mandai.

Pothos Curtisii Hook. f. Climbing on trees, Bukit Mandai, Kranji.

(*Acorus Calamus* L. "Deringu" cultivated and occuring as an escape. It rarely flowers here, but I found it in flower in June 1899.)

LEMNACEÆ.

Lemna paucicostata Hegelm. Ditches, Tanglin, Galang, etc.

L. polyrhiza, Ditches, Tanglin.

L. sp. near *L. trisulca*. L. Galang.

Wolfia arhiza Wimm. Ditches, Alexandra road.

TRIURIDEÆ.

Sciaphila affinis Becc. A minute slender plant pink with violet fruits. Not rare, dense jungle among dead leaves. Bukit

Timah, Chan Chu Kang, Selitar. I doubt this being distinct from Blume's *Sc. tenella*.

NAIADACEÆ.

Naias minor All. Ditches, Gardens, often a perfect pest in the Gardens lake.

ERICCAULONEÆ.

Eriocaulon sexangulare L. Very common all over Singapore.

E. truncatum Ham. Damp sandy spots, common. Tanglin, Tampenis, Bukit Timah, Chan Chu Kang.

CYPERACEÆ.

Kyllinga cylindrica Nees. Rare, sandy spots. Cathedral close.

K. melanosperma Nees. Rare, in long damp grass. Tanglin.

K. brevifolia Rottb. Very common, whole island.

K. monocephala Rottb. Whole island.

Pycreus nitens Nees. Rare, damp sandy spots, Selitar, Changi.

P. polystachyus Beauv. Very common, waste ground and open spots. var. *laxiflorus*. Marshy ground.

Cyperus Haspan L. Very common in marshy spots. Whole island.

C. diffusus Vahl. Sandy woods, Bukit Timah.

C. radians Nees. Sea shores, Changi.

C. compressus L. Common in waste ground, whole island.

C. Iria L. Weed of cultivation, whole island.

C. distans L. Very common in waste ground.

C. Malaccensis Lam. Muddy spots by tidal rivers, Balestier plain.

C. pilosus Vahl. Wet or damp spots, whole island.

C. bancanus Miq. Cantley's collection, no locality.

C. Zollingeri Steud. Common, waste ground near villages.

C. rotundus L. Very common weed, gardens and waste ground

C. stoloniferus Retz. Sea sand, Tanjong Ru, Changi.

Mariscus Dregeanus Kth. Common sandy places near the sea. Tanjong Katong, Balestier plain, Changi.

M. Cyperinus Vahl. Very common in dry spots, all over Singapore.

M. Sieberianus Nees. Waste ground, Tanglin, Galang.

M. albescens Gaud. Common near the sea. Tanjong Ru, Rochore, Bajau.

M. microcephalus Presl. Galang.

Eleocharis variegata, var. *laxiflora* C.B.C. Very common in ponds and marshes, Tanglin, Reservoir, Blakang Mati, Changi.

E. ochrostachys Steud. Not rare, Garden Lake, Changi, Selitar, Tivoli.

E. capitata Br. Local, Changi, Tampenis, Teban.

E. chaetaria Roem. Common in ditches, Tanglin, Chasseriau Estate, Selitar.

E. fistulosa Schultes. Local. Marshes round the reservoir.

Fimbristylis tetragona Br. Balestier plain.

Fimbristylis acuminata Vahl. Common. Blakang Mati, Bukit Timah, Changi.

F. setacea Benth. Rare, Tanglin.

F. nutans Vahl. Damp sandy spots, Bukit Timah, Changi, Bukit Mandai, Blakang Mati.

F. pauciflora Br. Common all over Singapore in turf, and in damp spots.

F. diphylla Vahl. Very common all over Singapore.

Var. *pluristriata.* Long wet grass. Bukit Timah, Chan Chu Kang.

F. aestivalis Vahl. Damp cultivated ground, Tanglin.

F. ferruginea Vahl. Tidal river mud. Kranji, Chan Chu Kang, Pulau Ubin.

F. spathacea Roth. Sandy spots near the sea, common. Selitar, Bukit Mandai, Kranji, Changi.

F. tenera var. *obtusata.* Sandy spots and in turf, not rare, Tanglin, Jurong, Bukit Timah, Chua Chu Kang.

F. asperrima Boeck. Woods, Bukit Mandai.

F. miliacea Vahl. Very common in dry spots all over Singapore.

F. globulosa Kth. Common. Tanglin.

F. complanata Link. Not very common. Botanic Gardens. Chan Chu Kang, Balestier plain.

F. leptoclada Benth. Common in sandy spots. Tanglin, Bukit Timah, Changi, Balestier plain.

Bulbostylis barbata Kunth. Common everywhere in sandy spots.

B. puberula Kth. In Cantley's collection, without locality.

Scirpus mucronatus L. Common in pools and ditches, Reservoir, Chan Chu Kang.

Sc. grossus Lin. fil. Rare. Ditch at Wayang Satu, Bukit Timah Road.

Fuirena umbellata Rottb. Common in swampy spots.

Lipocarpha argentea R. Br. Common in wet spots all over the island.

L. microcephala Kth. Local. Bukit Mandai, and on the Bukit Timah road near Kranji, Galang.

Rhynchospora Wallichiana Kth. Common in dry heathy spots. Juróng, Sungei Morai, Selitar.

R. malasica. C. B. C. Rare, Bedok, Bukit Mandai.

R. aurea Vahl. Common in wet spots all over the island.

R. glauca var *chinensis*. Rare. Sandy spots usually near the sea. Blakang Mati, Changi.

Schoenus calostachyus Poir. Rare. Sandy spots, Changi.

Cladium glomeratum Br. Damp sandy spots, Changi.

Gahnia tristis Nees. Common, Blakang Mati, Bukit Timah, Sungei Morai, Tanglin.

Remirea maritima, Aubl. Sea shores, local, Changi, Tanah Merah.

Hypolytrum latifolium Rich. Woods, Jurong, Chan Chu Kang.

H. proliferum Boeck. Damp spots, Tanglin, Chan Chu Kang.

Thoracostachyum bancanum Kurz. Very common in all jungles.

Mapania palustris Benth. Dense woods, common, Bukit Timah, Chan Chu Kang.

M. longa C. B. C. In streams in jungle, rare, Chan Chu Kang.

M. multispicata C. B. C. Jungles, Bukit Timah.

M. humilis Naves. Jungles, common, Chan Chu Kang, Bukit Timah, Kranji, Bajau.

Scirpodendron costatum Kurz. "Silensing." Common in tidal woods, forming large clumps of long grassy leaves, among which the flower panicles are concealed. The fruit is an inch long and is probably the largest in the order. Bukit Mandai, Jurong, Changi, Selitar.

Lepironia mucronata Rich. Swamps, Teban, Jurong.

Scleria radula Hance. Bukit Timah, Bedoh.

Scl. Ridleyi Clarke. Rare, Changi. It also occurs in Pulau Buru near the Carimon Isles and Hongkong.

Scl. biflora Roxb. Damp spots and turf. Blakang Mati, Bukit Timah, Changi, Tanglin.

Scl. zeylanica Poir. Wet spots, Changi, Tanglin.

Scl. caricina Benth. Very common, paths and turf, and damp spots. All over Singapore.

Scl. lateriflora Bckler. Kalang, Tanglin.

Scl. oryzoides Presl. Rare, wet spots, Changi.

Scl. bancana Miq. Common in open country, Tanglin, etc.

Scl. multifoliata Boeck. Not uncommon in woods. Bukit Timah, Garden jungle.

Scl. sumatrensis Retz. Very common in open country all over the island.

Scl. levis Retz. Common in dry open spots and waste ground. Whole island.

Carex cyrtostachys Brngn. Local, in a stream on Bukit Timah.

GRAMINEÆ.

Paspalum scrobiculatum L. Common everywhere.

P. conjugatum Berg. Very common, probably introduced.

P. distichum Burm. Plentiful in salt mud all round the island, Tanjong Ru, Bajau.

P. sanguinale Lam. Common everywhere in waste ground.

P. longiflorum Retz. Common in waste ground.

Isachne Kunthiana Wt. Wet places in woods. Bukit Mandai, Chan Chu Kang, Jurong.

I. australis R. Br. Very common in marshes, Tanglin, etc.

I. miliacea Roth. Wet spots in woods, Tanglin, Bukit Timah Road 6th mile, Selitar.

Panicum crusgalli L. Rare, collected by Hullett without locality

P. colonum L. Common in waste ground.

P. distachyum L. Not Common, Bukit Mandai, Changi, Tanglin.

P. repens L. Common, Tanglin, Reservoir, Changi.

P. auritum Presl. Wet, open spots, Reservoir, Changi, Ang Mo Kio.

P. indicum L. Common, waste ground.

P. myosuroides Br. Ditches, Ang Mo Kio, Kranji.

P. nodosum Kth. Hedges and thickets, Tanglin, Chan Chu Kang.

P. ovalifolium Poir. Rare, Government Hill.

P. sarmentosum Roxb. Woods, Grange Road, Changi, Sumbawang.

P. luzonense Presl. Dry roadsides and waste ground, Tanglin, Galang.

P. patens L. Shady spots, Tanglin, Bukit Timah, Chua Chu Kang.

P. pilipes Nees. Roadsides, Bukit Timah, Gardens, etc.

P. latifolium L. Damp, shady spots, Tanglin.

Axonopus cimicinus Beauv. Waste ground, Tanglin, Chan Chu Kang.

Setaria glauca Beauv. Waste ground, common. Tanglin, Ang Mo Kio, Chan Chu Kang.

Thuarea sarmentosa Pers. Sandy places near the sea, local. Changi, Galang, Teluk Kurau.

Leersia hexandra Sw. Common in marshes, whole island.

Leptaspis urceolata R. Br. Dense woods, Bukit Timah, Changi, Chan Chu Kang.

Perotis latifolia Ait. Sandy places, Cathedral compound, Galang, Changi.

Zoysia pungens Willd. Common in turf and near the sea.

Coix Lachryma-Jobi L "Job's Tears," "Jilei." Occurs in waste ground.)

Dimeria ornithopoda Trin. Dry sandy spots, Tanglin, Bukit Timah road. Var. *Subramosa* sub. var. *imperfecta* Hackel. Changi.

Imperata arundinacea Cyrill. "Lalang.' Probably the commonest plant in the island.

I. exaltata Brngn. "Lalang Jawa." Common, usually near abandoned villages, Selitar, Bajau, Chua Chu Kang.

Ischoemum rugosum Salisb. Rare, Galang.

I. magnum Rendle. Blakang Mati, Balestier plain, Galang. I have also collected it in Labuan.

I. muticum L. Common everywhere.

I. ciliare Retz. Roadsides, and turf. Very common.

I. timorense Kth. Roadsides, Tanglin, Kranji.

Rottboellia glandulosa Trin. Borders of woods and thickets, Changi, Bajau, Pulau Ubin.

Andropogon pseudograya Kth. Sandy places. Galang, Changi, Blakang Mati.

A. aciculatus Retz. Very common in turf, etc., everywhere.

A. contortus L. Sandy spots near the sea, Changi.

Anthistiria arguens Willd. Dry open spots. Chinese cemetery, Sepoy lines.

A. gigantea var. *villosa.* A very tall reedlike-grass. Dry spots. Fort Siloso, Siglap, Balestier plain.

Polytrias præmorsa Hack. Grassy spots. Tanglin, Chasseriau Estate.

Sphoerocaryum elegans Nees. Wet paths in jungle common, Kranji, Ang Mo Kio.

Sporobolus indicus L. Mt. Faber, Ang Mo Kio, Tanglin, Galang.

Eriachne pallescens Br. Dry sandy spots. Blakang Mati, Galang.

Cynodon dactylon Pers. Common in dry spots.

Chloris barbata Sw. Pulau Brani (introduced) Passir Panjang

Eleusine indica L. Very common in waste ground. The cultivated variety *coracana* is also sometimes to be met with.

E. aegyptiaca Desv. Local, Rochore, Changi.

Eragrostis tenella R. and S. Very common in waste ground.

E. amabilis Wight. Very common.

E. elegantula Steud. Chasseriau Estate.

E. elongata Jacq. Dry spots, Tanglin, Changi, Bukit Timah, Chasseriau Estate.

Centotheca lappacea Beauv. Common in woods. Garden jungle, Bukit Timah, etc.

Lophatherum Lehmanni Brngn. Woods. Garden jungle, Selitar, etc.

Bambusa Ridleyi Gamble.* A very slender bamboo growing in dense woods, Bukit Timah.

(*Dendrocalamus flagellifer* Munro. Cultivated for its edible shoots. Jurong, Tanglin.)

Schizostachyum Blumei Nees. Perhaps introduced from Java, Roadsides, Selitar, Bukit Timah Road.

(*Gigantochloa verticillata* Munro. Cultivated, Tanglin, Bukit Timah Road.)

Ochlandra Ridleyi Gamble.* "Buluh Kasap." Bukit Mandai, Choa Chu Kang. The Javanese say this is introduced from Java, but it is not known elsewhere than Singapore.

FILICES.

In this list of the ferns, I have followed Beddome's Ferns of British India.

Gleichenia linearis Burm. *Gl. dichotoma* Willd. "Resam," common all over Singapore.

Alsophila latebrosa Hook. Tree fern, stem about 5 feet tall and 2 inches through. Common in damp woods. Bukit Timah, Jurong, Chan Chu Kang, Bukit Mandai, Choa Chu Kang.

A. comosa Hook. Not rare, Bukit Timah, Jurong, Selitar, Chan Chu Kang.

A. Ridleyi Bak. Rare, Sungei Morai.

Lecanopteris carnosa Bl. Very rare, on lofty trees, Bukit Timah,

Hymenophyllum polyanthos. Common on trees and rocks in thick woods. Bukit Timah, Kranji, Changi, Bajau, Sungei Morai.

H. denticulatum Sw. Not common, mangroves, Kranji.

H. Neesii Hook. Selitar, Bukit Timah.

H. sp. Bukit Mandai (8938).

Trichomanes muscoides Sw. Rocks, Bukit Timah.

Tr. Javanicum Bl. Terrestrial, very common in all damp woods.

Tr. rigidum Sw. Less common, Bukit Timah, Toas, Kranji, Sungei Morai, Selitar, Tanjong Merawan.

Tr. filicula Bory. *Tr. bipunctatum* Poir. Creeping on rocks and trees, not very common, Bukit Timah, Chan Chu Kang, Kranji.

Tr. maximum Bl. Rare, Bajau.

Tr. digitatum Sw. Rare, Kranji.

Tr. parviflorum Poir. "Singapore, Moore's Herbarium" fide Beddome ; not seen.

Humata heterophylla Sw. On trees and on the ground in sandy spots. Common, Changi, Bajau, Tampenis, Kranji, Bukit Timah.

H. angustata Wall. On trees, Sungei Morai, Chan Chu Kang.

H. pedata Sw. Not common, Kranji, Bajau.

H. parallela Wall. Tanjong Merawan.

H. sessilifolia Bl. "Singapore, Sinclair and Moore's Herbarium" in Beddome; not seen.

Leucostegia parvula Wall. Mangrove swamps. Kranji, Sungei Buluh, Tanjong Merawan.

Prosaptia contigua Sw. "Singapore" fide Beddome, must be very doubtful.

Davallia triphylla Hook. On lofty trees, apparently by no means rare, but difficult to produce. Bukit Timah, Selitar, Kranji.

D. solida Sw. Common, Selitar, Chua Chu Kang, Sungei Morai.

D. elegans Sw. On trees, often very high, and on the sand of the shores, Bukit Timah, Changi.

Microlepia speluncae L. Common on banks, Tanglin, Ang Mo Kio, Changi, Pasir Panjang, Rochore.

Lindsaya repens Thw. Climbing on small trees in thick forest. Bukit Timah.

L. trapeziformis Dry. *L. Lancea* (L). Dense forest, Bukit Timah Selitar.

L. borneensis Hook. Jurong.

L. rigida Sm. Rare, Sungei Buluh.

L. Walkerae Hook. In open wet spots, common, but local, Changi, Tampenis, Bukit Mandai.

L. divergens Wall. Common in dry woods, Bukit Timah, Bajau, Sungei Morai.

L. lanuginosa Wall. On trees, Jurong river, Bajau, on trees in the Botanic Gardens.

Schizoloma lobata Poir. In dense woods, Bukit Timah.

Sch. ensifolia Sw. In thick wet woods. Chua Chu Kang.

Sch. media R. Br. Rare, Pulau Brani.

Sch. heterophylla Dry. Rare, Pulau Brani.

Adiantum flabellulatum L. Banks, Changi; Rocks, Pulau Ubin.

A few other species have established themselves as garden escapes.

Cheilanthes tenuifolia Sw. Common in dry spots, Tanglin, Chan Chu Kang, Pulau Ubin.

Pteris ensiformis Burm. Common in dry spots, Bukit Timah, Tanglin, Pulau Ubin.

Pt. longifolia L. Mount Pleasant, (Hullett).

Pt. aquilina L. Common all over Singapore.

Litobrochia incisa Thunb. Tanglin (probably an escape).

Ceratopteris thalictroides L. Common in ditches and sluggish streams. Tanglin, Selitar, Changi.

Blechnum orientale L. Very common in open places, Tanglin, Bukit Timah, etc.

B. Finlaysonianum Wall. In similar localities, Reservoir, Bukit Timah, Chan Chu Kang.

B. serrulatum Rch. Singapore (Hullett).

Thamnopteris nidus L. Common on trees all over Singapore, the large form var. *musaefolia* is the commonest form.

Asplenium squamulatum Bl. Much resembles the last, but has a creeping stem. Wet woods, usually growing on stumps, Bukit Timah, Chua Chu Kang.

A. longissimum Bl. On roots of Bamboos, Tanglin.

A. tenerum Forst. Woods, common, Garden jungle, Bukit Timah, Ang Mo Kio.

A. falcatum Lam. Rare, woods, Bukit Timah.

A. macrophyllum Sw. Not common, Chan Chu Kang, Sungei Buluh, Pulau Ubin (Kunstler).

Diplazium pallidum Bl. Toas.

D. porrectum Wall. Common in woods, Reservoir, Holland Road, Chan Chu Kang, Bukit Timah, Changi.

D. bantamense Bl. Singapore (Hullett).

D. sylvaticum Presl. Singapore (Hullett).

D. speciosum Mett. Wood near Holland road, Serangoon Road, Bukit Timah.

D. tomentosum Hook. Woods, Bukit Timah.

D. sorzogonense Presl. Bukit Timah.

Anisogonium cordifolium Mett. Rocks, Bukit Timah.

Aspidium Singaporianum Wall. Woods, common, Bukit Timah, Chua Chu Kang.

A. vastum Bl. Woods, Bukit Timah, Pulau Ubin.

A. cicutarium Sw. Common in woods, Sungei Blukang, Bukit Timah, Pulau Ubin.

A. semibipinnatum. Bukit Timah, Bajau, Bukit Mandai.

A. Zollingerianum Kze. Bukit Timah.

Pleocnemia gigantea Bl. Bukit Timah.

Lastrea crassifolia Bl. Bukit Timah, Bajau, Bukit Mandai

L. fuscipes Wall. Bukit Timah.

L. appendiculata. Chua Chu Kang.

Nephrodium unitum L. Common in open places, Galang, Selitar.

N. cucullatum Bl. Common, Sepoy lines, Jurong, Changi.

N. aridum Don. Jurong, Green Hill, Kranji.

N. urophyllum Wall. Dense jungle, Bukit Timah.

N. molle Desv. Common in open places, Tanglin, Chua Chu Kang, Selitar, Pulau Brani.

Var. *amboinense.* Green Hill, etc.

Var. *procurrens.* Green Hill.

Var. *didymosorum.* Not rare.

N. pennigerum Bl. Chan Chu Kang.

N. tectum Wall. Singapore (Wallich); not seen.

N. heterocarpon Bl. Green Hill (Hullett).

N. polycarpum Bl. *Mesochlæna polycarpa* Bl. Woods, Bukit Timah.

N. latebrosum Kze. Bukit Timah.

N. truncatum Presl. Singapore (Hullett).

Nephrolepis exaltata L. Common in open country all over Singapore.

N. volubilis J. Sm. Climbing over bushes, Rochore, Toas, Sungei Morai.

N. acuta Presl. Singapore (Hullett.)

N. Duffii. Has established itself at Changi and a few other places.

Dictyopteris Barberi Hook. Bukit Timah.

D. difformis Bl. Bukit Timah.

Polypodium decorum Brack. Common on trees, mangrove swamps, Kranji, Sungei Buluh, Toas.

P. streptophyllum Bak. Very rare. Trees on Serangoon Road (Murton).

P. adspersum Bl. and *P. setigerum* Bl. in Moore's Herbarium (Beddome), probably wrongly localised.

Goniophlebium verrucosum Wall. Damp open spots, Bukit Mandai, Pasir Panjang.

Niphobolus adnascens Sw. On trees, Changi, Pulau Ubin.

N. acrostichoides Sw. Garden jungle, Chan Chu Kang.

N. penangianus Hook. Rare, Kranji.

Dipteris Horsfieldii Br. Abundant on rocks and banks overhanging the sea, all round the island from Pasir Panjang to Changi, also on Pulau Tekong and other islands in the Strait.

Drynaria Linnaei Bory. On trees, Changi, Serangoon, Toas.

D. quercifolium L. On trees, Toas.

D. splendens Hook. Singapore (Beddome).

Pleopeltis stenophylla Bl. On lofty trees, Bukit Timah.

P. sinuosa Wall. Common on trees. This curious fern is remarkable for its hollow rhizome always full of ant's nests. Gardens, Jurong, Bukit Timah.

P. longifolia Mett. Sungei Morai.

P. angustata Sw. Common on trees, Gardens, Sungei Morai, Changi, Bajau, Serangoon.

P. punctata L. *P. irioides* Hook. Common on trees and banks. Tanglin, Siglap, Sungei Buloh, Chan Chu Kang.

P. phymatodes L. Very common on trees on the ground in dry spots. Tanglin, Bukit Timah, Selitar, Changi.

P. nigrescens Bl. Woods, Bukit Timah.

Monogramme trichoidea Sm. A very small hair-like fern, rocks, Bukit Timah.

Syngramme Wallichii Hook. Woods, common, Bukit Timah, Selitar, Chua Chu Kang, etc.

S. alismaefolia Hook. Less common, Bukit Timah, Chan Chu Kang.

Selliguea Feei Hook. Common on trees, especially mangroves Kranji, Bajau, etc.

S. membranacea Hook. "Singapore, Moore's Herb." (Beddome.)

Gymnogramme calomelanos. The silver fern occurs here and there as an escape. Tanglin, Chan Chu Kang.

Meniscium triphyllum Sw. Banks of streams, Toa Payoh.

M. cuspidatum Bl. Upper Mandai, Bukit Timah, Chua Chu Kang.

Antrophyum reticulatum Kaulf. On trees and rocks, not common, Bukit Timah.

A. plantagineum Kaulf. Selitar.

Vittaria elongata Sw. Very common on trees, Gardens, Kranji, Thompson Road, etc.

V. scolopendrina Presl. On trees. Chua Chu Kang.

Taenites blechnoides Willd. Very common in woods all over Singapore.

Drymoglossum piloselloides Presl. Common on trees everywhere.

Elaphoglossum latifolium Sw. On trees in mangrove swamps. Kranji.

Stenochlæna palustre L. Common, climbing over trees and bushes. The young creeping form with delicate finely cuts fronds may be found in wet woods. I found a curious fasciated form on Bukit Timah. Rochore, Tanglin, Bukit Timah, etc.

Polybotrya appendiculata Willd. Local. Rocks, Bukit Timah.

Gymnopteris subrepanda Hook. Bukit Timah.

G. Presliana Hook. Bukit Timah (Hullet).

Acrostichum aureum L. Common in tidal mud, on all the rivers.

Platycerium grande Sm. Not seen. Singapore (Beddome).

Pl. biforme Bl. Common in trees all over Singapore.

Schizaea dichotoma Sw. Dry woods, common all over Singapore.

Sch. digitatum Sw. Dry woods. Common all over Singapore.

Lygodium microphyllum B. Br. Common in open places, thickets, etc. Tanglin, Changi, Kranji.

L. circinatum Sw. *L. dichotomum* Bedd. "Ribu-Ribu." Very abundant, climbing over trees and bushes, whole island.

L. flexuosum L. Singapore, Hullett.

Angiopteris evecta Hoffm. Rocky woods, Bukit Timah.

Ophioglossum nudicaule L. Bukit Panjang, Chan Chu Kang.

O. pendulum L. Epiphytic on *Thamnopteris* and *Platycerium*. Not common, Tanglin.

LYCOPODIACEAE.

Lycopodium cernuum L. Terrestrial. Common all over Singapore, in open country and secondary growth.

L. taxifolium Sw. Epiphytic on mangroves and other trees near the sea. Sungei Sumbawang, Chan Chu Kang.

L. phlegmaria L. Epiphytic, Garden jungle, Chan Chu Kang.

L. squarrosum Forst. Epiphytic. Tanjong Merawan.

L. nummularifolium Bl. Epiphytic, Chan Chu Kang.

Selaginella atroviridis Spring. Common in woods, Garden jungle, Changi, Bukit Timah, Chua Chu Kang.

S. plumosa Bak. Plentiful in many spots in damp woods, Bukit Timah, Jurong.

S. Willdenowii Bak. Common climbing in thickets. Bukit Timah, Bukit Mandai, Kranji, etc.

S. trichobasis Bak. "Singapore, Sir W. Norris," fide Baker; perhaps an error for Penang, where Sir W. Norris collected plants. I have not seen it in Singapore.

S. sp. Small plant, Bukit Timah, No. 6547.

Psilotum flaccidum Wall. On trees in mangrove swamps, Kranji

P complanatum Sw. Mangroves, Sungei Morai, Kranji.

RHIZOCARPEAE.

Azolla pinnata R. Br. A small floating plant. Ditches, common, Tanglin, Ang Mo Kio, Galang.

Addenda.

Ludwigia parviflora Roxb. Ditches, Tanglin.

Enhydrias angustipetala Ridl. Common in ponds and ditches, Tanglin. This new genus must be put in place of *Hydrilla verticillata*, for which it was mistaken.

Chinese Names of Streets in Penang,

By LO MAN YUK.

Communicated by the Secretary.

In making this little compilation, the compiler has followed the example set before him by the late Mr. H. T. Haughton who published a list of street names of Singapore Town with their Chinese equivalents in the Journal of the Straits Branch of the Royal Asiatic Society in the June issue of 1891. The present compilation may be taken as a fairly complete list of the names of roads, streets and lanes in George Town with their respective Chinese names as called by the Hokkiens and Cantonese, two of the more important sections of the Chinese community in Penang, as well as with notes explaining the meaning and giving the derivation of the Chinese names. From a glance at these explanatory notes, it will be observed that the Chinese call their streets generally after some prominent buildings or objects of view, or the nationality of the people residing. or the particular kind of business carried on, in the locality. There are, however, some new and out-of-the-way places which have no Chinese names but which are inserted here partly for the purpose of making the list as complete as possible and partly for the purpose of leaving space for the insertion of any Chinese names that may be evolved in future. To this little compilation are appended (1) a list of some notable buildings and places in George Town (2) a list of some district names in town and up-country, (3) a list of the names of some islets in the vicinity of Penang and (4) a list of names of some places in Province Wellesley and Dindings; all with their Chinese equivalents. In conclusion, the compiler desires to express his best thanks to Mr. Cheam Cheow Heng, the Senior Chinese Interpreter of the Police Courts, and other friends for much valuable information concerning this compilation.

Acheen Street: (1) *Hokkien*. Koâi^{n} laû-á 高樓仔 "a small high tower," the high tower is the four-storied corner house at the junction of Acheen Street and Beach Street. *Cantonese*, Ko lau chai 高樓仔 (2) *Hokkien*, Phah chio̍h ke 打石街 "striking stone street;" so called from the stone-cutters' shop there. *Cantonese*, Ta shek kai 打石街

Acheen Street Ghaut: (1) *Hokkien*, Koâi^{n}-laû-á lō·-thaû 高樓仔路頭 *Cantonese*, Ko-lau-chai lo-thau 高樓仔路頭 (2) *Hokkien*, Phah-chio̍h-ke lō·-thaû 打石街路頭 lō·-thaû means landing-place. *Cantonese*, Ta-shek-kai lo-thau. 打石街路頭

Ah Quee Street: *Hokkien*, A kùi ke 亞貴街 called after Captain Ah Quee who presented it to the Municipality. *Cantonese*, A Kwai kai 亞貴街

Argus Lane: *Hokkien*, Sek lân ni (Serani) lé-paì-tn̂g aū hāng-á 色蘭乳禮拜堂後巷仔 "Serani Church back lane" = the lane behind the Church of Assumption.

Argyle Road: *Hokkien*, Bang-ka-lí hāng 望葛里巷 "Bengali lane;" so called because there used to be many, and there are still some, Bengalis living there. *Cantonese*, Mang-ka-li hong 孟加里巷

Armenian Street: PART I., between Beach Street and Pitt Street. (1) *Hokkien*, Pún-thaû-kong hāng 本頭公巷 "gods' lane;" so called after the Kong-si house of the Toā Peh Kong 大伯公 otherwise known as the Kièn Tek 建德 secret society, where they kept their gods; the remains of that Kong-si house may still be seen at the junction of Armenian Street and Pitt Street. *Cantonese*, Tai-pak-kung hong 大伯公巷 "gods' lane." (2) *Hokkien*, Kièn goân ke 建元街; Kièn is evidently taken from the name of the Kien Tek Kong-si referred to in (1). Goân means origin, and Ke street.

PART II., between Pitt Street and Acheen Street: *Hokkien*, Phah tâng ke 打銅街 "striking copper street," from the Malay braziers' shops there. *Cantonese*, Ta thung kai 打銅街

Armenian Street Ghaut: *Hokkien*, Pún-thaû-kong-hāng lō·-thâu 本頭公巷路頭 *Cantonese*, Tai-pak-kung-hong lo-thau. 大伯公巷路頭

Ayer Itam Road: *Hokkien*, A-iá i-tâm (Ayer Itam) lō· 亞也依淡路; lō· means road. *Cantonese*, Ayer Itam lo 亞逸依淡路

Bagan Jermal Road: *Hokkien*, Oân-tó·-lō· 灣斗路 Oân-tó· means the bay.

Barrack Road: *Hokkien*, Peng pâng lō· 兵房路 "soldier barrack road." *Cantonese*, Peng fong lo 兵房路

Beach Street: PART I., between Light Street and China Street. *Hokkien*, Thó·-khò· (thaú-khò·) ke 土庫街

"godown street;" street where the European firms are. *Cantonese*, Tho-fu kai 土庫街

PART II., between China Street and Chulia Street. *Hokkien*, Kang-á-khaú 港仔口 "harbour entrance"; in olden times, before the reclamation of the ghauts, the shipping business was principally done in this part of Beach Street by the Chinese. *Cantonese*, Kong chai hau 港仔口

PART III., between Chulia Street and Armenian Street. *Hokkien*, Tiong ke 中街 "middle street," i. e., the middle part of Beach Street. *Cantonese*, Chung Kai 中街

PART IV., between Armenian Street and Acheen Street. *Hokkien*, Toan lô-sin 緞羅申. *Cantonese*, Tuan lo-san 緞羅申 Lô-sin is Hussain, i.e., Tungku Syed Hussain, who formerly owned most of the houses in this part of Beach Street.

PART V., between Acheen Street and Malay Street. *Hokkien*, Phah thih ke 打鐵街 "striking iron street," from the blacksmiths' shops there. *Cantonese*. Ta thit ka 打鐵街.

PART VI. between Malay Street and Prangin Ditch. *Hokkien* Siā bóe 社尾 "village end"; formerly this was practically the end of the town. *Cantonese*, She mi 社尾 Those parts of Prangin Road and Bridge Street which join Beach Street at the Anson Bridge are sometimes, though improperly, called Siā-bóe; the general name for the whole district round about here is Ujong Pasar, meaning end of town.

PARTS IV, V. and VI. are often called Fuk Kin kai 福建街 "Hokkien Street" by the *Cantonese*, because most of the shopkeepers there are *Hokkiens*.

Bishop Street: PART I.. between Beach Street and Penang Street. (1) *Hokkien*, Chhat bok ke 漆木街 "painting wood street," from the furniture makers' shops there. *Cantonese*, Chhat muk kai (2) *Hokkien*, Chhâ kang ke 漆木街 "wood workmen street."

PART II., between Penang Street and King Street. *Hokkien*, Lū-sòng lé-paì-tn̂g chêng 呂宋禮拜堂前 "Armenian Church front," Lū-sòng being a corruption of Luzon of the Philippine Islands. *Cantonese*, Lu-sung lai-pai-thong Chhin 呂宋禮拜堂前

PART III., between King Street and Pitt Street. *Hokkien*, Sūn-tek Kong-si ke 順德公司街 called after the Kong-si house of the Sūn Tek people. *Cantonese*, Shun Tak Kong-si kai 順德公司街

Brick-Kiln Road: *Hokkien*, Hong chhia lō· 風車路 "wind carriage road"; "wind carriage" is the Switchback Railway. *Cantonese*, Fung Chhe lo 風車路

Bridge Street: PART I., Beach Street end. *Hokkien*, Kòe káng-á 過港仔 "passed rivulet," the other side of the Prangin Ditch. *Cantonese*, Kwo kong chai 過港仔

PART II., the middle part. *Hokkien*, Pang lông 廊枋 "plank depot." *Cantonese*, Pan Chhong 廠枋

PART III. Jelutong Road end., *Hokkien*, Sêng-hông biō lō. 城隍廟路 "Seng Ong Temple Street," called after the

Temple of the tutelary God of the town. *Cantonese*, Shing Wong miu lo 城隍廟路

Buckingham Street: *Hokkien*, Sin-ke thaû 新街頭 "Campbell Street head." *Cantonese*, San-ke thaû 新街頭

Burmah Road: *Hokkien*, Gû chhia chúi 牛車水 (often contracted to Chhia chúi, "bullock-cart water"; before the construction of the Municipal Water Service, water sellers used to come to a well here for water and convey the same in bullock carts to town for sale. *Cantonese*, Ngau Chhe Shui 牛車水

Campbell Street: (1) *Hokkien*, Sinke 新街 "new street," in contradistinction to Chulia Street, the old street where all the Chinese brothels were before Campbell Street was constructed. *Cantonese*, San kai 新街 (2) *Hokkien*, Sin tōa-mûiⁿ-laû 新大門樓 "new Chulia Street" (see Chulia Street). *Cantonese*, San tai mun lau 新大門樓 (3) *Cantonese*, Kam-le tai kai 金利大街 Kam-le being the Cantonese pronunciation of Campbell, and tai kai meaning big street. This last name is chiefly used in matters of marriage, funeral and joss processions.

Cannon Square: *Hokkien*, Liông San Tông laī 龍山堂內 "Liong San Tong inside"; Liông San Tông is the Chop of the Seh Khu Kong-si 姓邱公司 which is inside this square. *Cantonese*, Shing Yau Kung-si; the Kong-si house of the surname Yau clan.

Cannon Street: *Hokkien*, Toā Chhèng Khang 大銃空 "big cannon hole," so called because during the Penang Riots the Government fired a cannon shot into this place where the people of the Toā Peh Kong 大伯公 otherwise known as the Kièn Tek 建德 Kong-si encamped.

Carnarvon Street: PART I., between Chulia Street and Campbell Street, *Hokkien*, Toā-mûiⁿ-laû hoâi ke 大門樓橫街 "Chulia Street, Cross Street"—the street branching off from Chulia Street. *Cantonese*, Tai-mun-lau wang ka[1] 大門樓橫街

PART II. between Campbell Street and the Station. *Hokkien*, Hoan-á thióng 番仔塚 "foreigners' cemetery" the old Malay cemetery. *Cantonese*, Ma-lai fau 嗎𤢃墳

PART III., between Acheen Street and Prangin Road, (1) *Hokkien*, Lam Chhân-á 沓田仔 "poor fields"=swamp; it was formerly nothing but a swamp. *Cantonese*, Chho thong 草塘 "grass pond"=swamp. (2) *Hokkien*, Sì-kak Chíⁿ 四角井 "square well"; formerly there was a square well near the junction of Kimberley Street. (3) *Hokkien*, Chàp-keng chhù 十間厝 "ten houses"; formerly there was a row of ten houses of the same height there. (4) *Hokkien*, Sìⁿ Tiuⁿ Kong-si ke 姓張公司街 called after the Kong-si house of the seh Tiu clan. *Cantonese*, Shing Chung Kong-si kai 姓張公司街

Carnarvon Lane: *Hokkien*, Kàm-kong laī 鑑先內

"Kampong inside," within the Kampong (or village) so called because formerly there was a Kampong in this locality. *Cantonese*, Kam-pong lai 金榜內

Cecil Street: *Hokkien*, Kòe Káng-á tē chhit tiaû lō· 過港仔第七條路 "passed rivulet, number seven street" i. e. the seventh street after crossing the Prangin Ditch from Beach Street. *Cantonese*, Kwo kong chai tai chhat thiu lo 過港仔第七條路

Che Em Lane: *Hokkien*, Pak Kan laī 北間內 "pak kan inside"; pak kan is the Chinese pronunciation of the Malay word pekan, a village.

China Street: *Hokkien*, Toā ke 大街 "big street," i. e., the principal street where the Chinese formerly carried on business. *Cantonese*, Kun yam miu chek kai 觀音廟直街 "Kun Yam Temple straight street." The street going straight from the Temple of the Goddess of Mercy.

China Street Ghaut: (1) *Hokkien*, Toā-ke lō·-thaû 大街路頭 *Cantonese*, Kun-yam-miu-chek-kai lo-thau 觀音廟直街路頭 (2) *Hokkien*, Bêng san lō·-thaû 明山路頭

Bêng san, Mr. Khoo Bêng San, a Chinese merchant, had a shop there.

Chowrasta Road: *Hokkien*, Kiet-lêng-á Bān-san 吉寧仔萬山 "Kling market," i. e., the Chowrasta market, where the fish and meat sellers are principally Klings; the word Bān-san being a corruption for the Malay word Bangsal. (Tamil street has the same name.) *Cantonese*, Kit-lêng pá-sat

吉寧巴虱 "Kling market," pá-sat being a corruption of the Malay word pasar.

Chulia Street: PART I., between Beach Street and Pitt Street. (1) *Hokkien*, kiet-lêng-á ke 吉寧仔街 "Kling Street," so called from the Kling shop-keepers there. The word Chulia itself is a Bengali word meaning Kling. (Vide King street PART IV). *Cantonese*, kit-ling kai 吉寧街 (2) *Hokkien*, lô·-lîn ke 羅粦街 Lô·-lîn is the Chinese pronunciation for Noordin and ke means street, so called after the business premises of Mr. H. M. Noordin. *Cantonese*, Yi sheung kai 衣箱街 "clothes box street," from the Chinese cabinet-makers' shops there.

PART II., between Pitt Street and Love Lane. *Hokkien* Toā mûiⁿ laû 大門樓 "big archway"; formerly there were two big archways to a large compound house here (see Sek Chuen Lane). *Cantonese*, Tai mun lau 大門樓

PART III., between Love Lane and Penang Road. *Hokkien* gû-kan-tàng 牛干冬 "cattle pen"; gû means cattle and kan-tàng is the Chinese pronunciation for the Malay word "kandang" meaning a pen. *Cantonese*, Sha kong thau 砂岡頭 "sand hill head," in former days people used to deposit rubbish there which heaped up in a mound.

Chulia Street Ghaut: (1) *Hokkien*, kiet-lêng-á-ke lō·-thâu 吉寧仔街路頭 (vide Chulia Street, PART I.) *Cantonese*, kit-ling-kai lo-thau 吉寧街路頭 (2) *Hokkien*, Sìⁿ Iûⁿ Kong-si ke 姓楊公司街 called after the Kong-si house of the Seh Iu clan. *Cantonese*, Shing Yeung Kong-si kai 姓楊公司街 (3) *Hokkien*, Chhâ lō·-thaû 柴路頭 "firewood landing-place"; firewood used to be sold there, before Maxwell Road, now a principal place for selling firewood, was constructed. (4) *Hokkien*, Toā chúi chíⁿ 大水井 "big water well"; formerly there was a big water tank there (*vide* Pitt street PART III).

Chulia Lane: *Hokkien*, Chảp-chhit keng 十七間 "Seventeen houses" there was a row of seventeen houses of the same size there. *Cantonese*, Shap-chhat kan 十七間

Church Street: *Hokkien*, Gī-hin ke 義興街 "Gī-hin street" after the Kong-si house of the Gī hin secret society, which stood where now the family residence of Captain Ah Quee is. *Cantonese*, Yi hing kai 義興街

Church Street Ghaut: (1) *Hokkien*, Gī-hin-ke lō·-thaû 義興街路頭 *Cantonese*, Yi-hing kai lo-thau 義興街路頭 (2) *Hokkien*, Chiú lō·-thaû 酒廊路頭 "distillery landing-place"; the distillery stands at the junction of Church Street and Beach Street and belongs to the Spirit Farm.

Cintra Street: (1) *Hokkien*, Sin-ke hoaîⁿ ke 新街橫街 "Campbell Street, Cross Street"—the street crossing Campbell Street. *Cantonese*, San kai wang kai 新街橫街 (2) *Hokkien*, Phah phaù ke 打炮街 the street where brothels of the lowest type are. *Cantonese*, Ta Phan Kai 打炮街 That part of this street which runs between Chulia Street and Campbell Street is often called Jit-pún ke 日本街 meaning Japanese Street—the street where the Japanese brothels are. *Cantonese*, Yat pun chai kai 日本寨街 "Japanese brothel street."

Dato Kramat Road: PART I., between Magazine Station and Dato Kramat Station. *Hokkien*, Kam-á hûiⁿ 柑仔園 "orange plantation"; formerly there was a big orange plantation there. *Cantonese*, Kam chai ün 柑仔園

PART II., between Dato Kramat Station and the Prisons. *Hokkien*, Sì-khàm tiàm 四坎店 "four shops"; there were only four shops there before. *Cantonese*, Si kan tim 四間店

Downing Street: (1) *Hokkien*, Goā koan 外關 "outer Government office"=Chinese Protectorate, which stands in this street. *Cantonese*, Man wa kun 問話舘 "asking question house"; house where female immigrants from China are examined=Chinese Protectorate. (2) *Hokkien*, Taī jîn koan 大人關 "the Taijin's office"=the Chinese Protectorate. *Cantonese*, Phai kun 牌舘 "license-house" i.e., the house where licences under the Contagious Disease Ordinance were issued=Chinese Protectorate.

Drury Lane: *Hokkien*, Sin hì-tâi 新戲臺 "new theatre" after the new Chinese theatre there. *Cantonese*, san hi-ün 新戲園

Esplanade Road: *Hokkien*, Chhaú-po· haí-kiⁿ lō· 草埔海墘路 "grass field seaside road"=road at the sea-side of the Esplanade. *Cantonese*, Ta po· te hoi phe 打波地海皮 "striking ball place sea-side." (2) Sin kau chheung hoi phe 小較場海皮 small parade ground sea-side."

Farquhar Street: PART I., between Pitt Street and Love Lane. *Hokkien*, âng mô· óh chêng 紅毛學前 "red hair school front," the front of the Penang Free School.

PART II., between Love Lane and Leith Street. (1) *Hokkien*, Liên hoa hô· 蓮花湖 "lotus pond," so called after a big lotus pond formerly situated at the side of the St. George's Girl School, the pond having been filled up some years ago on account of the many accidents to people in attempting to get at the lotus. (2) *Hokkien*, sek-lân-ni (serani) o̍h chêng 色蘭乳學前 "serani school front.

PART III., between Leith Street and Northam Road. *Hokkien*, âng mô· lō· 紅毛路 "red hair road" the road where Europeans live. (Northam Road has the same name.)

Fish Lane: *Hokkien*, kiâm hû-á hāng 鹽魚仔港 "salt-fish lane," because it branches off from Prangin Lane, which is called the 'Salt-fish yard.' *Cantonese*, ham ü hong 鹽魚港

Gladstone Road: *Hokkien*, hoé chhia lō· 火車路 "fire carriage road"; the fire carriage is the Tramway. *Cantonese* Fo chhe lo 火車路

Green Hall: (1) *Hokkien*, toān pá-lí 緞巴尼 Mr Paddy (Pali) formerly owned a large portion of land here. (2) *Hokkien*, ki-lin hō· 麒麟虎 a corruption for Green Hall.

Heriot Street: *Hokkien*, koè káng-á tē pe̍h tiâu lō· 過港仔第八條路 "passed rivulet, number eight street;" i.e. the eighth street after crossing the Prangin Ditch from Beach Street. *Cantonese*, kwo kong chai tai pat thiu lo 過港仔第八條路

Hong Kong Street: *Hokkien*, Hiang káng lō· 香港路 hiang káng is the Hokkien pronunciation of Hongkong.

Cantonese, Heung kong kai 香港街 heung kong is the Cantonese pronunciation of Hongkong, and kai means street. (The word Hong itself is a mispronunciation of heung originating from the boat-population of Canton who were the first to come in contact with Europeans when they appeared in China).

Hospital Road: *Hokkien*, Pīⁿ chhù lō· 病厝路 "sick house road"=road leading to the General Hospital. *Cantonese*, Wong ka yi im lo 王家醫院路

Hutton Lane: *Hokkien*, Gia-lân (jalan) a-téng 惹蘭亞丁 a-teng is the Chinese pronunciation for Hutton.

Jelutong Road: *Hokkien*, Jit-lo̍h-tōng lō· 日落洞路 jit-lo̍h-tōng is the Chinese pronunciation for Jelutong. The town end of this road is called ē-tōng 下洞 or hē-tōng 下洞 which means the lower tōng, and the country end of this road is called téng-tōng 頂洞 or siāng-tōng 上洞 which means the upper tōng, i. e., cave. *Cantonese*, Yat lok tong.

Katz Street: *Hokkien*, Koè káng-á tē la̍k tiaû lō· 過港第六條路 "passed rivulet, number six street," i. e., the sixth street after crossing the Prangin Ditch from Beach Street. *Cantonese*, Kwo kong chai tai luk thiu lo 過港仔第六條路

Kedah Road: *Hokkien*, Kām kong mâ la̍k kah 鑑光麻六甲 "Kampong Malacca." *Cantonese*, Ku phai kun 舊牌館 "old license house"; this referring to the Lock Hospital, which was formerly situated at the site where the present Chowrasta Dispensary is.

Keng Kwee Street: *Hokkien*, Kéng kùi ke 景貴街 named after Captain Ah Quee, who built this street and connected it with Penang Road. *Cantonese*, Keng kwai kai 景貴街

Kimberley Street: (1) *Hokkien*, Tîo-chiu ke 潮洲街 Te chiu is the name of a prefecture in the Quang-tung Province in South China, better known as Chao-chow-fu 潮洲府 from which the Te-chiu people come. This street is so called because formerly there were many China-born Te-chiu prostitutes living there. Owing, however, to the prohibition of female emigration from Swatow, which is the sea-port of Chao-chow-fu, by the Chinese Government upon representations being made by the Te-chiu merchants in the Straits Settlements, all Te-chiu prostitutes have since disappeared from this street. *Cantonese*, Chiu chau mui kai 潮洲妹街 "chiu chau girl street." (2) *Hokkien*, Soa^{n}-thaû ke 汕頭街 "Swatow street." (3) *Hokkien*, Mī^{n} soà^{n} ke 麪線街 "vermicelli street," so called after the vermicelli makers there. (4) *Hokkien*, Sì^{n} Ti^{n} kong-si ke 姓鄭公司街 after the Kong-si house of the seh Ti^{n} clan, which was formerly in this street. (5) *Hokkien*, Phah soh-á hāng 打索仔巷 "striking rope street" formerly there were some rope makers' shops there. (Rope Walk is sometimes called by this name also.)

King Street: Part I., between Light Street and Bishop Street. *Hokkien*, Kaú-keng-chhù aū 九間厝後 "Penang Street back" (*vide* Penang Street, Part I.)

Part II., between Bishop Street and China Street. (1)

Hokkien, Kúi^{n}-tang toā peh kong ke 廣東大伯公街 Kúi^{n}-tang is the *Hokkien* pronunciation of Quang-tung, a province in South China. Toā peh kong means god, so called because there is a temple there built by subscriptions raised solely from the *Cantonese*. *Cantonese*, Kwong-tung tai pak kung kai 廣東大伯公街 (2) *Hokkien*, À-phièn kong-si ke 亞片公司街 "Opium farm street," so called after the Opium and Spirit Farms at the junction of China Street. *Cantonese*, In kung-si 煙公司

PART III., between China Street and Market Street. *Hokkien*, Kū Hô-seng kong-si ke 舊和勝公司街 Hô-seng is the name of a secret society, which formerly had its Kong-st house there. *Cantonese*, Kau wo shing kung-si kai 舊和勝公司街

PART IV., between Market Street and Chulia Street. *Hokkien*, Kiet-lêng-á ke 咭寧仔街 "Kling Street"; this par of King Street was formerly inhabited chiefly by Klings (*vide* Chulia Street, Part I.) *Cantonese*, Pak kap lung 伯鴿籠 'Pigeon hole," so called because formerly there were some exceedingly small houses there occupied as brothels.

Kulim Lane: (1) *Hokkien*, Bān an tâi 萬安臺 "Bān an theatre," so called after the name of the Chinese theatre in this lane. *Cantonese*, Mau on thoi 萬安臺 (2) *Hokkien*, Bêng hì-tâi 明戲臺 "Bêng's theatre"; bêng is a part of the name of Mr. Ong Bêng Tek, the former proprietor of the theatre.

Kuala Kangsa Road: *Hokkien*, Hoan-á hì-hûi^{n} ke 番仔戲園街 "foreigners' theatre," so called from the Malay theatre there.

Cantonese, Ma-lai hiün kai 嗎獹戲園街 "Malay theatre street."

Leith Street: *Hokkien*, Siang hó chhù chêng 相好厝前 "Siang ho's house front."

Light Street: *Hokkien*, Po lê khaú 玻璃口 "Police mouth" entrance to the Police Courts. *Cantonese*, Po-le-si chhiu 玻璃士前 "Police front."

Love Lane: *Hokkien* Sek-lân-ni (Serani) hāng 色蘭乳巷 Eurasian lane, this lane was formerly inhabited chiefly by Eurasians.

Cantonese, PART I., between Farquhar Street and Muntri Street; Shap-tsz-ka lai-pai-thong pin 十字架禮拜堂邊 "Cross Church side"; the church referred to is the church of Assumption.

PART II., between Muntri Street and Chulia Street. (1) Ma shui hau 孖水喉 "double water pipe," formerly there were two public stand-pipes there standing side by side. (2) Lo pau miu kai 魯班廟街 "lo pau temple street" the street where the Temple of the God of Carpentry is. This lane is sometimes called lat-le hong by the Cantonese, lat-le being a mispronunciation for Love Lane and hong meaning lane.

MacAlister Road: *Hokkien*, Tiong lō· 中路 "middle road," i.e., the middle road of the six roads meeting at Magazine *Cantonese*, Chung lo 中路

MacCallum Street: *Hokkien*, Kòe káng-á tē gō· tiaû lō

過港仔第五條路 "passed rivulet, number five street" i.e., the fifth street after crossing the Prangin Ditch from Beach Street. *Cantonese*, Kwo kong chai san lo 過港仔第五

Magazine (the open space formed by the intersection of the six roads in front of the Magazine Police Station). (1) *Hokkien*, Chhèng iòh keng 銃藥間 "gun-powder depot" formerly the Government gun-powder magazine was there. *Cantonese*, Fo yeuk kuk 火藥局 (2) *Hokkien*, Gō· pha teng 五枝燈 "the five lamps" referring to the Municipal lamp-post which holds five lamps. *Cantonese*, Ng chan tang 五盞燈 (3) *Hokkien*, Lȧk chhē lō· 六乂路 "the intersection of six roads" viz., Magazine Road, Gladstone Road, Penang Road, MacAlister Road, Dato Kramat Road and Brick-kiln Road. The Malay version of this name is Simpang Anam. *Cantonese*, Luk a lo 六乂路

Magazine Road: *Hokkien*, Kòe káng-á tē it (or thaû) tiaû lō· 過港仔第一條路 "passed rivulet, number one street," i.e., the first street after crossing Prangin Ditch from Beach Street. *Cantonese*, Kwo kong chai tai yat thiu lo 過港仔第一條路

Malay Street: *Hokkien*: Thâi gû hāng 刣牛巷 "killing cows lane," cattle were formerly slaughtered there for the market. It is also called Thaî gû aū 割牛巷 the back of the place where cows were killed. *Cantonese*, Thong ngau hong.

Malay Street Ghaut: *Hokkien*, Thâi gû hāng lō·-thaû

剖牛巷路頭 *Cantonese,* Thong-ngau-hong lo thau 劏牛巷𨂾頭

Market Lane: *Hokkien*, Kóng hok kū hāng 廣福居巷 kong hok ku is the Chinese name of the Penang Mutual Improvement Association the premises of which are in of this lane. *Cantonese*, Yi-nai hong 二奶巷 "concubine lane," so called because this lane used to be occupied chiefly by kept women.

Market Street: *Hokkien*, Pá-sat ke 巴虱街 pá sat is a corruption for pasar, a Malay word meaning market. *Cantonese*, Pa-sat kai 巴虱街

Market Street Ghaut: *Hokkien*, Sin bān-san 新𡋀山 "the new market," i. e,, the Central market. Bān-san is a corruption of the Malay "bangsal", meaning a shed. *Cantonese*, San pat sat 新巴虱 "new pasar

Maxwell Road: Part I., between Bridge Street and Gladstone Road. *Hokkien*, Chhâ tiâⁿ 柴埕 "firewood yard"; this is the principal place where firewood is sold in Penang.

Part II., between Gladstone Road and Penang Road. *Hokkien*. Khai Hêng Bí bí-ka 開恒美米絞 "Chop Khie Heng Be's rice mill. N. B. This road and Prangin Road are often called káng-á kiⁿ 港仔墘 "rivulet side" because of their proximity to the Prangin Ditch.

Muda Lane: *Hokkien*, Thái-ko hāng 癩哥巷 "leper's lane", many lepers used to live in this place on the charity of a certain wealthy Chinaman.

Muntri Street: (1) *Hokkien*, Sek-lân-ni hāng 色蘭乳巷 Eurasian lane. (2) *Hokkien*, Lâm hoa i-īⁿ ke 南華醫院街 "Lâm hoa hospital street," after the Chinese medical institution there. *Cantonese*, Nam wa yi iin kai 南華醫院街 (3) *Hokkien*, Sin haí-lâm kong-si ke 新海南公司街 "new Hailam kong-si street," after the new Kong-si house of the Hailams. *Cantonese*, San hoi nam kung-si kai 新海南公司街

Noordin Street: *Hokkien*, Koè káng-á tē jī tiaû lō· 過港仔第二條路 "passed rivulet, number two street' i. e., the second street after crossing the Prangin Ditch from Beach Street. *Cantonese* Kwo kong chai tai yi thiu lo 過港仔第二條路

Northam Road: *Hokkien*, Âng mô· lō· 紅毛路 "red hair road"=road where the Europeans live. That part of this road which joins Penang Road is sometimes called âng mô· kū thióng 紅毛舊塚 "red [hair old cemetery", i. e., the Protestant and Roman Catholic Cemetery there. *Cantonese*, Hung mo lo 紅毛路

Penang Road: PART I., about Chulia Street. *Hokkien*, Tiaù-lâng ke 吊人街 "hanging people street"—formerly criminals were hung there. *Cantonese*, Tiu yan kai 吊人街

PART II., about Chowrasta market. (I) *Hokkien*, Kū kha-khu 舊脚樞 "old jail"=the old Criminal Prison, which was formerly situated at the present vacant piece of ground opposite the Chowrasta market. *Cantonese*, Kau ka-ku 舊脚樞 (1)

Hokkien, Lêng chiak chhù chêng 寧爵厝前 "Leng Cheak's house front."

PART III., about the Prangin Ditch. *Hokkien*, Tiaù kiô thaû 吊橋頭 "suspension bridge head," i. e., the bridge over the Prangin Ditch. This name is sometimes, though improperly, applied, to those parts of Prangin Road, Maxwell Road and Burmah Road which join Penang Road at the Prangin Ditch; the general name for the whole district round about here is Titi Papan, meaning wooden bridge. *Cantonese*, Tiu khiu thau 吊橋頭

PART IV., about the Magazine Police Station. *Hokkien*, Lâng chhia tèng pâi koan 人車釘牌館 "rickshaw nailing licence office" = the rickshaw registration department.

Penang Street: PART I., betweeen Light Street and Bishop Street. *Hokkien*, Kaú keng chhù 九間厝 "nine houses"; formerly there were only nine housees in this part of Penang Street on the right hand side as one goes up from Light Street.

PART II., between Bishep Street and Market Street. (1) *Hokkien*, Kúi^{n}-tang ke 廣東街 Kùi^{n}-tang = Quang-tung Province in Southern China and ke = street; so called because this part of Penang Street is principally occupied by Cantonese shopkeepers. *Cantonese*, Kwong-tung kai 廣東街 kwong-tung = Quang tung Province; kai = street. (2) *Hokkien*, Má-káu ke 馬交街 "Macao Street"; *Cantonese*, Thong-yan kai 唐人街 "Chinamen's street"; the word Chinaman refers to the Cantonese in distinction from the Hokkiens, whom the former considered to be foreigners on account of their different provinciality.

PART III., between Market Street and Chulia Street *Hokkien*, Che-tî ke 齊知街 "chetty street," from the chetty money-lenders living there.

Perak Road: *Hokkien*, Toā lō· aū 大路後 "big road back,"=behind the big road.

Phee Choon Lane: *Hokkien*, Phi Chùn lō· 丕俊路 Phe Choon is a part of the name of Mr. Li Phee Choon.

Pitt Lane: *Hokkien*, Tîo-chiu kong-si aū 潮洲公司後 "Te-chiu Kong-si back," behind the Te-chiu Kong-si house in Chulia Street, where it joins Queen's Street. *Cantonese*, Chhiu Chau Kung-si au 潮洲公司後

Pitt Street: PART I., between Light Street and China Street. *Hokkien*, Koan im têng chêng 觀音亭前 "Koan im temple front," front of the temple of the Goddess of Mercy. The Straits-born women often pronounce Klam or Kolam instead of koan im, by way of contraction. *Cantonese*, Kun yam miu chhin 觀音廟前

PART II., between China Street and Chulia Steet. *Hokkien*, Toā ba-laí 大峇唻 "big balei"; the Balei is the Pitt Street Police Station. *Cantonese*, Tai mata liu 大孖打寮 "big police house."

PART III., between Chulia Street and Armenian Street. *Hokkien*, Toā chúi chí^{u} 大水井 "big water well"; formerly there was a big water tank there. *Cantonese*, Tai mun lau kai-si 大門樓街市 "Chulia Street market." [Vide Chulia Street

Ghaut (4)] (2) *Hokkien,* Iâ kha 椰脚 "coco-nut foot"; there were many cocoa-nut trees there.

Prangin Road: Part I., between Beach Street and Carnarvon Street. (1) *Hokkien*, Oân thâu-á 灣頭仔 "the small turning," i. e., the turning from Beach Street. *Cantonese*, Wan thau cha^{i} 灣頭仔 (2) *Hokkien*, Hūi Chiu Kong-si ke 惠洲公司街 "the street where the Kong-si house of the Hūi chiu people is. Hūi Chiu is the name of a prefecture in South China whence the Khehs or Hakkas come. *Cantonese*, wai chau kung-si kai 惠洲公司街.

Part II., between Carnarvon Street and Sungei Ujong. *Hokkien*, Khai Hêng Bí ke 開恒美街 the street where Chop Khie Heng Be (rice merchant) is. *Cantonese*, Hoi Hang Mi ka^{i} 開恒美街.

Part III., between Sungei Ujong and Penang Road. *Hokkien*, Gû chhia ke 牛車街 "bullock-cart street," from the bullock-cart builders' shops there. N. B. This road and Maxwell Road are often called Káng-a kî^{n} 港仔墘 "the rivulet side," because of their proximity to the Prangin Ditch. *Cantonese*, Ngau chhe kai 牛車街

Prangin Lane: *Hokkien*, Kiâm hû tiâ^{n} 鹽魚埕 "salt-fish yard," so called because salt-fish are dried and cured there, i. e., at the back part of the shops facing Prangin Road.

Presgrave Street: *Hokkien*, Koè káng-á tē sa^{n} tiaú lō· 過港仔第三條路 "passed rivulet, number three street,'

i. e, the third street after crossing the Prangin Ditch from Beach street. *Cantonese*, Kwo kong chai tai sam thiu lo 過港仔第三條路

Queen Street: (1) *Hokkien*, Chåp-jī keng 十二間 "twelve houses," there is a row of twelve houses of the same height. *Cantonese*, Shap yi kan 十二間 (2) *Hokkien*, Kū Hô Håp siā ke 舊和合社街 "old Ho Hap society street," called after the Kong-si because of this society there. *Cantonese*, Kau Wo Hap she kai 舊和合社街

Race Course Road: *Hokkien*, Toā chhài hûiⁿ lō· 大菜園路 "big vegetable garden road," from the many vegetable plantations there. *Cantonese*, Tai chhoi un 大菜園

R. C. O. Front: *Hokkien*, Koan-á kak 關仔角 "Government office corner"= the corner of the Government offices. *Cantonese*, Tai ma-thau 大馬頭 "big jetty," after the Old Jetty there.

Residency Road: *Hokkien*, Jī ông chhù lō· 二王厝路 "Second King's house road," second King being the Chinese way of calling the Resident Councillor.

Rope Walk: (1) *Hokkien*, Gī-hok ke 義福街 "Gī hok street," so called because the Gī hok secret society had their Kong-si house there formerly. *Cantonese*, Yi fuk kai 義福街 (2) *Hokkien*, Phah soh hāng 打索巷 "making rope lane"; formerly cocoanut husk ropes were manufactured there. [Vide Kimberley Street (5)]

Sandilands Road: *Hokkien*, Koè káng-á tē kaú tiaû lō· 過港仔第九條路 "passed rivulet, number nine street," i.e., the ninth street after crossing the Prangin Ditch from Beach Street. *Cantonese*, Kwo kong chai tai kau thiu lo· 過港仔第九條路

Scotland Road: *Hokkien*, Batu Gantong 峇抵眼東 Malay, overhanging rock; there is a big overhanging rock there.

Seh Tan Court: *Hokkien*, Sì^{n} Tân kong-si 姓陳公司 after the Kong-si house of the Seh Tan clan. *Cantonese*, Shing chau Kung-si 姓陳公司

Sek Chuan Lane: *Hokkien*, Toā mûi^{n} laû laī 大門樓內 "big archway inside"= within the big archway; there was a big compound house there with two entrances, over each of which there was a big archway, the present Sek Chuan Lane being formerly one of the two entrances. (*Vide* Chulia Street, PART II.) *Cantonese*, tai mun Tau lung 大門樓隴

Stewart Lane: *Hokkien*, Koan im têng aū 觀音亭後 "Koan im temple back" = behind the temple of the Goddess of Mercy. *Cantonese*, Kun yam miu hau 觀音廟後

Sungei Ujong: (1) *Hokkien*, Hô· chio tiâ^{n} 胡椒埕 "Pepper yard," from the court-yard there where pepper is exposed to be dried. (2) *Hokkien*, Bān Tek Hong lō· 萬得豐路 the road where chop Ban Tek Hong owns the pepper yard above referred to is situated. *Cantonese*, Man tak fung kai 萬得豐街

Tamil Street: *Hokkien*, Kiet-lêng bān san 吉寧萬山 "Kling market." *Cantonese*, Kit-ling pa-sat 吉寧巴虱

Tek Soon Street: (1) *Hokkien*, Tek Sūn lō· 德順路 (2) *Hokkien*, Chhâ tiâ^{n} aū 柴埕後 "Maxwell Road back" (*Vide* Maxwell Road, Part I.)

Thye Sin Street: *Hokkien*, Koè káng-á tō sì tiaû lō 過港仔第四條路 "passed rivulet, number four street, i. e., the fourth street after crossing the Prangin Ditch from Beach street. *Cantonese*, Kwo kong chai tai si thin lo 過港仔第四條路

Toa Aka Lane: (1) *Hokkien*, Phah-thih-ke hāng-á 打鐵街巷仔 "Beach street small lane," the lane that branches off from Beach street (*Vide* Beach street, Part V.). *Cantonese*, Ta-thit kai hong chai 打鐵街巷仔 (2) *Hokkien*, Kàm-kong-laī hoaî^{n} lō· 鑑光內橫路 "Carnarvon Lane cross street." *Cantonese*, Kam-pong loi wang kai 金榜內橫街

Transfer Road: *Hokkien*, Tek Sūn chhù pi^{n} ke 德順厝邊街 "Tek Soon's house side street." *Cantonese*, Tak shun ok pin 德順屋邊

Union Street: *Hokkien*, Po-lê aū 玻璃後 "Police back" = behind the Police Courts. *Cantonese*, Po-li-si hau 玻璃司後

Waterfall Road: *Hokkien*, A ėk tò-lūn 亞逸倒潤 the Chinese pronunciation for Ayer Terjun, which means 'water plunging.'

Weld Quay: *Hokkien*, Haí kiⁿ sin lō· 海墘新路 'sea-beach new road," or Sin haí kiⁿ ke 新海墘街 "new sea-beach road." *Cantonese*, Hoi phe 海皮 "sea-beach."

Western Road: *Hokkien*, Anĝ mô· sin thióng 紅毛新塚 "red hair new cemetery," so called after the European new cemetery there. Sai hoa hāng 西華巷 the Western grand lane. Pêng an hāng 平安巷 the happy lane. *Cantonese*, San hung mo fan 新紅毛墳 "new red hair cemetery." Sai wa hong 西華巷 Pheng on hong 平安巷

GOVERNMENT OFFICES.

R. C. O. *Hokkien*, Jī ông koan 二王關 "No. 2 King's office"; the Governor being the No. 1 King.

Treasury: *Hokkien*, Kong-pān-gê khò·-pâng 公班衙庫房 kong-pān-gê is the Chinese pronunciation for company, i. e., the East India Company, the Government; and khò·-pâng means treasury. *Cantonese*, Fu-fong 庫房 "treasury."

Stamp Office: (1) *Hokkien*, Bē ang-á thaû ê koan 賣尪仔頭之關 "Selling doll-head Office." *Cantonese*, Mai kung chai thau nga mun 賣公仔頭衙門 "selling doll-head yamen." (2) *Hokkien*, si-tàn koan 寔担關 si-tàn = stamp, and koan means office. *Cantonese*, Si tam kun 士担舘

Public Works Department: *Hokkien*, Niû tē koa^{n} 量地官 "measuring land official." *Cantonese*, Leung te kun 量地官

Land Office: (1) *Hokkien*, Gâ-lân koan 牙蘭關 gâ-lân = grant. *Cantonese*, Thiu tho thien 田土廳 field land department." (2) *Hokkien*, Tē cho· koan 地租關 "land rent office."

Official Assignee's Office: *Hokkien*, Pó kiông si 報窮司 "Reporting poverty Official." *Cantonese*, Po khung is 報窮司

Chinese Protectorate: (1) *Hokkien*, Goā koan 外關 "Outer Office" = the office that transacts business with the general public. *Cantonese*, Phai kun 牌舘 "Licence house" = house where licences under the C. D. O. were issued. (2) *Hokkien*, Taī-jîn koan 大人關 Taī-jîn literally means a great man, but in Chinese official circles it is used as a title applying to any mandarin of and above the rank of a Taotai, equivalent in English to His or Your Excellency. *Cantonese*, Mau wa kun 問話舘 "asking questions house" = house where female immigrants from China are examined under the Women and Girls' Protection Ordinance. (3) *Hokkien*, Hō·-ùi si koan 護衛司關 "Protecting Official's Office" office of the Protector (of Chinese). *Cantonese*, Tai yan nga mun 大人衙門 "Tai-jin's yamen. (4) *Hokkien*, Chèng bū si koan 政務司關 "the government business official's office." *Cantonese*, U wai si nga mun 政務

司衙門 "Protector's yamen". (5) Cheng mo si nga mun "government business official's yamen."

Marine Department: *Hokkien*, Haí koan 海關 "Harbour Office." *Cantonese*, Hoi kwan 信舘

General Post Office: *Hokkien*, Phe koan 批關 "Letter Office." *Cantonese*, Shun koan 海關

Supreme Court: *Hokkien*, Toā kók 大咯 "big court, kók being the Chinese pronunciation for court. *Cantonese*, Tai kot 大葛 "big court."

Solicitor General's Department: *Hokkien*, Kong-pāu-gê chn̄g su 公班衙狀師 kong-pāu-gê = company, i.e., the East Indian Company, and chn̄g su means a lawyer. *Cantonese*, Wong ka chong si 王家狀師 "Government lawyer."

Sheriff Department: *Hokien*, Che-lip 奢立 this is the Chinese pronunciation for Sheriff. *Cantonese*, Fung pho kun 封舖官 "sealing shop official." (2) *Hokkien*, Hong chhù koa^n 封厝官 "Sealing house official." (3) *Hokkien*, Lê-long koa^n 唎郎官 Lelong is a Malay-Portuguese word meaning auction, and koa^n means official.

Police Courts: *Hokkien*, Po-lê 玻璃 "police." *Cantonese*, Po-le-si 玻璃司 "police."

Coroner's Department: *Hokkien*, Giām si koa^n 驗屍官 "examining corpse official." *Cantonese*, Im si kun 驗屍官

Police Superintendent's Office: *Hokkien*, Goā po-lê-chú 外玻璃主 "outer police magistrate." *Cantonese*, San sham lau 新審樓

Police Station: (1) *Hokkien*, Má-tá^{n} liaû 馬打寮 "police house." *Cantonese*, Mata liu 馬打寮 (2) *Hokkien*. Ba laî 峇唻 the Malay word balai, a station.

Detective Police Station: *Hokkien*, Âm paî keng 暗牌間 "secret badge house"; detectives are called "secret badge," because they, not wearing any uniform, are supposed to wear a police badge secretly on their persons. *Cantonese*, Am phai kun 暗牌館

Marine Police Station: (1) *Hokkien*, Sūn haí má-tá^{n} liaû 巡海馬打寮 "inspecting sea police house." *Cantonese*, Shui si mata liu 水師馬打寮 shui si means marine. (2) *Hokkien*, Sūn haí ba laí 巡海峇唻

Criminal Prison: *Hokkien*, Kha khu keng 脚樞間 "foot-fettering house." *Cantonese*, Kam fong 監房 "confining house"

Debtor's Prison: *Hokkien*, Khiàm chà kha khu keng 欠債脚樞間 "Owing debts prison." *Cantonese*, Chhin chai kam 錢債監 "Debt prison."

General Hospital: *Hokkien*, Pī^{n} chhù 病厝 "Sick house." *Cantonese*, Yi shang kun 醫生館 (2) *Hokkien*, Ló kun chhù 老君厝 "Doctor's house."

MERCANTILE OFFICES.

Chamber of Commerce: *Hokkien*, Âng mô· siang kong-si 紅毛商公司 "European merchants' Kong-si." *Cantonese*, Sai yan sheung mo kuk 西人商務局 "Western people's commercial business board."

Hongkong & Shanghai Bank: (1) *Hokkien*, Hui hong bang 匯豐口望 Hui hong being the Chinese chop of this bank and bang=bank. *Cantonese*, Ui fung ngan hong 匯豐銀行 Ui fung being the Chinese chop of this bank, and ngan hong means money firm-bank. (2) *Hokkien*, Siāng haí bang 上海口望 "Shanghai bank." *Cantonese*, Shung hoi ngan hong 上海銀行 "Shanghai bank."

Chartered Bank; *Hokkien*, Cha-ta bang 查噠口望 "Chartered Bank." *Cantonese*, Cha-ta ngan hong 查打銀行 "Chartered Bank."

Netherlands Trading Society: *Hokkien*, Hô-lân bang 和蘭口望 "Holland bank." *Cantonese*, Ho-lan ngan hong 和蘭銀行

Telegraph Office: *Hokkien*, Phah tâng soà^{n} koan 打銅線關 "striking brass wire office." *Cantonese*, Tin po kuk 電報局 "electricity report board."

Tin Exchange: (1) *Hokkien*, Chip siang só· 集商所 "assembling merchant's place. *Cantonese*, Chap sheung so 集商所 (2) *Hokkien*, Siak Kong-si 錫公司 "the tin Kong-si." *Cantonese*, Shek kung-si 錫公司

Opium and Spirit Farms: (1) *Hokkien*, A-phièn kong-si 亞片公司 "opium Kong-si." *Cantonese*, Nga phin kong-si 亞片公司 (2) *Hokkien*, Chiú kong-si 酒公司 "Spirit kong-si." *Cantonese*, Chau kong-si 酒公司

Municipal Office: (1) *Hokkien*, Ah sè koan 押栖關 ah sè=the Malay word hasil, meaning tax, and koan means office. (2) *Hokkien*, Chúi sè koan 水栖關 "water rate office." (3) *Hokkien*, Kong pó kiok 工部局 "works department."

Town Hall: *Hokkien*, Ang mô· kong koán 紅毛公館 "European club."

Chinese Town Hall: *Hokkien*, Pêng cheang kong koán 平章公館 *Cantonese*: Pheng cheung kung kun 平章公館

The Medical Institution: *Hokkien*, Lâm hoa i īⁿ 南華醫院 *Cantonese*, Nam wa-gi ün 南華醫院

St. George's Church: *Hokkien*, Ang mô toā lé-pài-tn̂g 紅毛大禮拜堂 "European big church."

Church of Assumption: *Hokkien*, Sek-lân-ni lé-paì-tn̂g 色蘭乳禮拜堂 "Eurasian Church."

Armenian Church: *Hokkien*, Lū-sòng lé-paì-tn̂g 呂宋禮拜堂 lū sòng being a corruption for Luzon of the Philippines Islands, and lé-pài-tn̂g means Church.

Penang Free School: *Hokkien*, Ang mô· óh 紅毛學 "European school".

St. Xavier's Institution: *Hokkien*, Sek-lân-ni óh 色蘭乳學 "Eurasian School."

St. George's Girls' School: *Hokkien*, Lú ȯh 女學 "girls' school".

Convent: *Hokkien*, Nî ko am 尼姑庵 "nunnery." *Cantonese*, Ku leung thong 姑娘堂 "ladies' house", the ladies being the nuns.

Government Hill: *Hokkien*, Seng kî soa^{n} 升旗山 "Hoisting flag hill". *Cantonese*, Shing khi san 升旗山

Dato Kramat Gardens: *Hokkien*, Ong ke hoa huî^{n} 王家花園 "Government gardens." *Cantonese*, Wong ke fa ün 王家花園

Waterfall: *Hokkien*, A-ek tò-lūn 亞逸倒崙 "Ayer turjun" = water plunging. *Cantonese*, Shui mo 水磨

Race Course: *Hokkien*, Phaú bé khoan 跑馬環 "running horse field." *Cantonese*, Phau ma chheung 跑馬場

Esplanade: (1) *Hokkien*, Chhaú po· 草埔 "grassfield." *Cantonese*, Siu kau chheung 小較場 "small parade ground." (2) *Hokkien*, Phah kiû po 打球埔 striking ball field." *Cantonese*, Ta po te 打波地 "striking ball land."

Fort Cornwallis: *Hokkien*, Ang mô· siâ^{n} 紅毛城 "European city." *Cantonese*, Phau thoi 炮臺 "fort."

New Jetty: (1) *Hokkien*, Thih lō·-thaû 鐵路頭 "iron landing place." (2) *Hokkien*, Thih kiô 鐵橋 "iron bridge."

Old Jetty: *Hokkien*, Koan-á kak pabian 關仔角鐏岸 koan á kak=R. C. O. front, and "pabian" is a Malay word for jetty.

Residency: *Hokkien*, Jī ông chhù 二王厝 "No. 2 King's house."

Chinese Consulate: *Hokkien*, Taī chheng kok lèng sū hú 大清國領事府 "The Great Pure Kingdom Consulate." *Cantonese*, Tai chheng kwok leng si fu 大清國領事府

The Temple of the Goddess of Mercy (in Pitt Street): (1) *Hokkien*, Koan im têng 亭音觀 "Koan Im Temple." *Cantonese*, Kun yam miu 觀音廟 (2) *Hokkien*, Kóng hok kiông 廣福宮 "Quang-tung and Fuhkien temple" = Cantonese and Hokkien temple. *Cantonese*, Kwong fuk kung 廣福宮

The Temple of the God of the Town (in Jelutong): *Hokkien*, Sêng ông biō 城隍廟 the Seng Ong god is supposed to take his appointment from Yama, the ruler of hell, to whom he has to report the doings, good or evil, of the people in the town under his jurisdiction. The Chinese consider this temple to be the most appropriate one for taking oaths, such as that of cutting off cock's heads, etc. *Cantonese*, Shing wong miu 城隍廟

The Temple of the God of Carpentry (in Love Lane): *Hokkien*, Lò· pān kò· biō 魯班古廟 "Lo pan's ancient temple." *Cantonese*, Lo pan ku miu 魯班古廟

The Temple of the Three Precious Ones—the Buddhist Trinity (in Ayer Itam): *Hokkien*, Kek lók si 極樂寺 "Supreme felicity monastery." *Cantonese*, Kek lok chi 極樂寺 (2) *Hokkien*, Sam pó tiēn 三寶殿 "the court of the Three Precious Ones," so called after the shrine of the Buddhist Trinity inside the above-mentioned monastery. *Cantonese*, Sam po tin 三寶殿

The Temple of Philosopher Lao-tsu, the founder of Taoism: *Cantonese*, Chheng koan si 清觀寺 "clear view monastery." This temple is situated at the top of a hill in Paya Rubong, and is approached by a path consisting of a long flight of granite steps known as the Chheng jī chàn 千二層 the 1200 steps. *Cantonese*, Chheng kun chi 清觀寺

The Temple of the Local Deities: (1) *Hokkien*, Toā peh kong 大伯公 *Cantonese*, Tai pak kung 大伯公 (2) *Hokkien*, Pún thaû kong 本頭公 One in King Street, one in Tanjong Tokong, one in Ayer Itam, etc. *Cantonese*, Tho te kung 土地公

The Pleasure Club 燕閒別墅 (in Chulia Street): *Hokkien*, Ièn hân pie̍t so. *Cantonese*, In han pit sü.

The Penang Literary Association 以文齋 (near the Esplanade): *Hokkien*, I bûn chai. *Cantonese*, I man chai.

The Chinese Club 清芳閣 (in MacAlister Road): *Hokkien*, Chheng hong ko̍k. *Cantonese*, Chhing fong kok.

The Anglo-Chinese Reading Room 萃雅軒 (in Chulia Street): *Hokkien*, Chui nge hiēn 萃雅軒 *Cantonese*, Su nga hin 萃雅軒

CHINESE KONGSI-HOUSES.

A. HOKKIEN. (Names romanised in Hokkien sound.)

Si^n	Khu	邱	Kong-si	Chop	Liōng San Tông	龍山堂	Cannon Square
,,	Khu	邱	,,	,,	Bûn San Tông	文山堂	Weld Quay.

Sì^{n}	Lîm	林	Kong-si	Chop	Kiú Liōng Tông	九龍堂	Beach Street.
,,	Tân	陳	,,	,,	Eng Chhoan Tông	潁川堂	Seh Tan Court.
,,	Iû^{n}	楊	,,	,,	Sù Ti Tông	四知堂	Chulia St. Ghaut
,,	Uî^{n}	黃	,,	,,	Chí Ièn Tông	紫燕堂	Jelutong
,,	Tiu^{n}	張	,,	,,	Chheng Hô Tông	淸河堂	Carnarvon St.
,,	Chiā	謝	,,	,,	Pó Sū Siā	寶樹社	Armenian St.
,,	Ong	王	,,	,,	Thaì Guân Tông	太原堂	Penang Road.

B. CANTONESE. (Names romanized in Cantonese sound.)

寧陽會館 Leng yeung ui kun; leng yeung is another name for san leng 新 and ui kun means meeting-house. (In King Street.)

會館 ui kun; ui stands for san ui 新會 and kun means house. (In Bishop Street.)

會寧館 Ui leng kun; here ui stands for si ui 四會 leng stands for kwong leng 廣寧 and kun means house. (In Muntri Street.)

香邑館 Heung yap kun; "heung town house." Heung stands for heung shan 香山 (In King Street).

伍氏家廟	Ng shi ka miu; "Surname Ng family temple." (In King Street.)
梁氏家廟	Leung shi ka miu; "Surname Leung family temple." (In Muntri Street.)
黃氏家塾	Wong shi ka shuk; "Surname Wong family school." (In Penang Street.)
李氏館	Li shi kun; "Surname Li house." (In Love Lane.)
端芬館	Tun fan kun; the Kong-si house of the people of surname Miu. (In Penang Street.)
古城會館	Ku shing ui kun, "The ancient city meeting house"; this is the meeting-house of the people of the following four surnames Lau 劉 Kwan 關 Cheung 張 and Chiu 趙 The words ancient city' bear reference to the story of the "Three Kingdoms," in which four notables of the above surnames respectively adopted each other as brothers. (In King Street.)
五福書院	Ng fuk shu un "the five blessings college"; this is the Kong-si house of the people coming from the following twelve districts of the Quang-tung (Canton) Province, viz., Nam Hoi 南海 Pun-u 潘禺 Tung kun 東莞 Shun tak 順德 Heung shan 香山 San on 新安 Sam shu 三水 Chhung fa 從化 Chang shang 增城 Ung mun 龍門 Chhing un 清遠 Fa un 花縣 (In Chulia street.)

C. TE-CHIU. Name romanized in Te-chiu sound.

韓江家廟	Hang kang kia bio, "Han river family temple"; so called after the name of a river near Swatow in China.

D. KHEH *or* HAKKA. Names romanized in Kheh sound.

嘉應會館	Ka in fi kwon; ka in = ka ying chow, and fi kwon means meeting-house. (In King Street.)
惠州會館	Fi chiu fi kwon; fi chiu = Wai chow. (In Prangin Road.)
增龍館	Chen liung kwon; chen stands for chen shang 增城 and liung stands for liung mun 龍門 (In King street.)
仁勝館	Yin shin kwon. This is an old Kong-si house of the Kheh people. The name is simply a fancy one. (In King Street.)
永大館	Yin thai kwon; yin stands for yin thiu 遠定 and thai stands for thai phu 大埔 (In Toa Aka Lane.)
從清會館	Chhung chhang fi kwon; chhung stands for Chhung fa 從化 and chhiang stands for chhiang yieu 清遠 (In Prangin Road.)

(*e*) HAILAM. Names romanized in Hailam sound.

瓊州會館	Keng chiu ui koan; keng chiu = kengchow. It is also called thien ho kiong 天后宫 meaning the Temple of the Queen of Heaven. (In Muntri Street.)

蘭亭閣 Lan teng kok This is merely a fancy name. (In Church Street.)

(f) SHANGHAI *and* NINGPO. Name romanized in Mandarin sound.

三江公所 San chiang kung so, "Three chiang public-house," the three chiangs (also pronounced kiang) being che kiang 浙江 kiang-su 江蘇 and kiang-si 江西 three provinces in North East China.

A LIST OF SOME DISTRICT NAMES IN PENANG.

PART I. In Town.

Bakar Bata: *Hokkien*, Chuiⁿ á iô 鐏仔窰 "Brick-kiln."

Dato Kramat: *Hokkien*, Sì khám tiàm 四坎店 "four shops." *Cantonese*, Si kan tin 四間店

Dhobi Ghaut: *Hokkien*, Sé pó· kiô 洗布橋 "washing clothes bridge."

Jalan Bharu; *Hokkien*, Tiong-lō· 中路 "middle road." *Cantonese*, Chung lo 中路

Kampong Bharu: *Hokkien*, Toā chhiū kha 大樹脚 "Big tree foot."

Kebun Limau; *Hokkien*, Kam-á huiⁿ 柑仔園 "Orange plantation." *Cantonese*, Kam chai un 柑仔園

Pulau Tikus; *Hokkien*, Phû lô· tî kut 浮羅池滑

Rifle Range; *Hokkien*, Phah chhèng po 打銃埔 "Firing gun field."

Sepoy Lines: *Hokkien*. Si paî po· 時排埔 si paî = sepoy; po· = field.

Tarek Ayer; *Hokkien*, Gû chhia chúi 牛車水 "Bullock-cart water." *Cantonese*, Ngau chhe shui 牛車水

Titi Papan; *Hokkien*, Tiaù kiô thaû 吊橋頭 "Suspension bridge head." *Cantonese*, Tiu khiu thau 吊橋頭

Ujong Pasir, or Prangin: Siā boé 社尾 "town end." *Cantonese*, She me 社尾

PART II. Up-country.

Some of the names are romanized in Kheh sound, as the up-country districts are inhabited more by Khehs than Cantonese.

Ayer Itam: *Hokkien*. A yá i tām 亞逸依淡

Ayer Puteh: *Kheh*, Kung si san 公司山 "Kong-si hill."

Bagan Jermal: *Hokkien*, Oân tò 灣斗 "bay."

Balik Pulau: *Hokkien*, Phû lô 浮爐 *Kheh*, San poi 山背 "hill back," i. e., the back of the Pentland Range. The town is called Pho· 坡 by the Hokkiens, and Tanjong by the Khehs. Balik Pulau village is called Kung-si, or Bokkan, which is a corruption of the Malay word "pekan," and the only street there is called fu lo kat chhong 湖爐街場

Balik Pulau Hill: *Hokkien*, Phaù taî téng 炮臺頂 "Fort top." *Kheh*, Phau thoi tong 炮台頂

Batu Ferringgi: *Hokkien*, Batu téng-gî 峇抵丁宜 *Kheh*, Ma tu tin yi 峇抵丁宜

Batu Itam: *Hokkien* Batu I-tām 峇抵夷淡 *Kheh*, Chin kau lung 進教巃 "Christian place."

Batu Lanchang: *Hokkien*, Batu bān chiang 峇抵閩漳

Batu Uban: *Hokkien*, Batu bān 峇抵閩

Bayan Lepas: *Hokkien*, Mâ la̍k pâi 嘛叻排

Bukit Penera: Niáⁿ téng 嶺頂 "hill-path top." *Kheh*, Au tang 凹頂 "valley tcp."

Gelugur; *Kheh*, Liong hang hiau 涼坑口 "cold stream mouth."

Gertak Sanggul: *Hokkien*, Boé ô· 尾湖 "last lake." *Kheh*, Bi fu 尾湖

Ginting: *Hokkien*, Bûn téng 文頂 *Kheh*, Vun ting kok. 文頂 Vun ting is a corruption for "Ginting," and kok means corner.

Jalan Bharu: *Hokkien*, Sin lō·-thaû 新路頭 "new landing place." *Kheh*, Sin tu thiau 新渡頭

Jelutong: *Hokkien*, Ji̍t lo̍h tōng 日落洞

Pasir Blanda: *Kheh*, Chuk sa wi 竹沙園 "Bamboo san enclosure."

Pasir Panjang: *Hokkien*, Toā soa po· 大沙埔 "Big sand field." *Kheh*, Thai sa pu 大砂埔

Paya Trubong: *Hokkien*, Tò bōng laī 倒蒙內 tò bōng is a corruption for Trubong, and lāi means inside.

Permatang Pasir: *Hokkien*, Māng-gi kha 望吃脚 "Manggis (mangosteen) foot." *Kheh*, Sa kong 沙崗 "sand hill."

Pondok Upil; *Hokkien*, Ô· pi^n 湖邊 *Kheh*, O bi 湖邊

Pulau Betong; *Hokkien*, Phû lô· bi̍t tōng 浮爐蜜洞 *Kheh*, Fu lo mit tong 浮爐蜜洞

Relau: *Hokkien*, Ô· laī 湖內 "lake within" = inside the lake. *Kheh*, (1) Fu lo wang 湖爐橫 (2) Lau kong 舊港 "Old stream."

Relau Hill: *Kheh*, Nga kong chhai 瓦崗寨 "the hill fortress."

Sungei Ara: *Kheh*, Sin kong 新港 "new stream."

Sungei Burong: *Kheh*, Sung kiau vu yiung.

Sungei Kluang: *Hokkien*, Bāng kha lân 望脚蘭 = "Pengkalan" which means "landing place" in Malay.

Sungei Nibong: *Kheh*, Sung kiau li bong.

Sungei Pening: *Kheh*, Sung kiau pin long.

Sungei Pening: *Hokkien* Chià^n chúi káng 淡水港 "Fresh water river."

Sungei Rusa: *Kheh*, Sung kiau liu sa.

Sungei Teeram; *Hokkien*, Koè soa^n-á 過山仔 "Over the hill."

Tanjong Bunga: *Hokkien*, Koè soa^{n} 過山 "Over the hill."

Tanjong Tokong: *Hokkien*, Pún thaû kong sū 本頭公嶼 "God's islet." *Kheh*, Hoi tsu tsz 海珠寺 "sea-pearl monastery."

Teluk Bahang: *Hokkien*, Lân chio huî^{n} 蘭椒園 "Pepper plantation."

Teluk Kumbar: *Hokkien*, Kong pá 公巴 *Kheh*, Kum pa.

ISLETS IN THE VICINITY OF PENANG.

Pulau Betong: *Hokkien*, Phû lô· bi̍t tōng 浮爐蜜洞

Pulau Jerijak: (1) *Hokkien*, Phû lô· jî jiak 浮爐兒惹 *Cantonese*, Muk kau shan 木冠山 "earthen-pot hill" = hill of the shape of an earthen pot. (2) *Hokkien*, Thái ko· sū 癩哥嶼 "Lepers' island," called after the Lepers' Hospital there.

Pulau Kra: *Hokkien*, Sū á 嶼仔 "islet."

Pulau Rimau: *Hokkien*, Aó·-á sū 虎仔嶼 "tigers island."

Pulau Tikus: (1) *Hokkien*, Pe̍h sū 白嶼 "white island." (2) *Hokkien*, Phû lô· kiet chí 浮爐結只 Malay "Pulau Kechil" = small island.

A LIST OF NAMES OF SOME PLACES IN PROVINCE WELLESLEY AND DINDINGS.

Province Wellesley: *Hokkien*, Koè káng 過港 "over the harbour."

Ara Kuda: *Hokkien*, À-lah kú-tá 亞刺古打

Ara Rendang: À-lah lang 亞刺郎

Aur Gading: *Hokkien*, Song-kai loa 雙溪賴 Sungai dua.

Bagan Ajam: *Hokkien*, Chiu ông iâ thaû 周王爺頭 "Chiu god head"—the place where the god is whose name is Chiu.

Bagan Dalam: *Kheh*, Fo shui chhong 水火廠 "Kerosine oil tank."

Bagan Lalang: *Hokkien*, Sì-kak huîⁿ 四角園 "square plantation."

Bagan Luar: *Hokkien*, Bāng liaû 網寮 "net-houses" = fishing houses.

Bagan Tuan Kechil: *Hokkien*, Chûn lō·-thaû 船路頭 "vessel landing place."

Bukit Mertajam: *Hokkien*, Toā soaⁿ kha 大山脚 "Big hill foot." *Kheh*, Thai san kiok 大山脚

Bukit Minyak: *Hokkien*, Tām-má (Damar) soaⁿ 淡媽山 "Damar hill." *Kheh*, Pa ma san 把麻山

Bukit Seraya: *Hokkien*, Sin pa 新把 "new forest." *Kheh*, Shin pa 新把

Bukit Tambun: *Hokkien*, Tambun 淡汶 *Kheh*, Tam mun 淡汶

Bukit Tengah: *Hokkien*, Bukit téng-gâ 武吉丁牙 *Kheh*, Vu tsz teng-a 芋子丁芽

Butterworth: *Hokkien*, Pak hái 北海 "north sea."

Cherok Tokun: *Hokkien* Tok-kun tō· 督君肚 *Kheh*. Tokun tu 督肚君

Jalan Bharu: *Hokkien*, Sin lō·-thaû 新路頭 "new landing place." *Kheh*, Sin thu thiau 新渡頭

Juru: *Hokkien*, Gī hú 義府 *Kheh*, Ngi fu 義府

Kapala Batas: *Hokkien*, Pa-la ba-tai

Kubang Semang: *Hokkien*, Ko-pa sam-bāng 高巴三夢 *Kheh*, Thai ng tham 大魚潭 "Big fish pond."

Lahar Ikan Mati: *Hokkien*, Ikan mati.

Machang Buboh: *Hokkien*, Pa-siā tō· 巴錫肚 *Kheh*, Ta siak tu 打錫肚

Maklom: (1) *Hokkien*, Sin hûiⁿ 新園 "new plantation." (2) *Hokkien*, Pa-tang (Batang) boé 巴東尾 "Batang end."

Mengkuang: *Hokkien*, Mang kuang. *Kheh*, Mang kang

Nibong Tebal: *Hokkien*, Ko ien 高淵 "Krian." *Kheh*, Kow yen.

Padang Manora: *Hokkien*, Jara.

Pagar Tras: *Hokkien*, "Pa-siā tō· sèng-tn̂g 巴錫肚聖堂 the holy church at Machang Buboh. *Kheh*, "Ta siak tu" shin thong 打錫肚聖堂

Parit Buntar: *Hokkien*, (1) Sin ba laî 新峇唻 "new station." (2) Bûn ta 汶礁

Penaga: *Hokkien*, Pún ná gâ 本拿呀

Permatang Bandahari: *Hokkien*, Ba tang hā lí 峇東夏里

Permatang Pasir: *Hokkien*, Batang Pasir; *Kheh*, Matang Pasir.

Permatang Pau *Hokkien*, Batang Po 峇東煲 *Kheh*, Matang pu 馬登煲

Poko Brangan; *Hokkien*, Lèng chùi tiàm 冷水店 "cold drink shop." *Kheh*, Liong shui tiam 冷水店

Sempang Ampat; Sin pang àm pat 新邦安拔

Sungei Bakap; *Hokkien*, Jiáu^{n} ì 擾夷 "Jawi." *Kheh* Yan yi.

Sungei Derhaka: *Hokkien*, Sungei laka. *Kheh*, Sa kong mui 沙崗尾 "sand hill end."

Sungei Rambai: *Hokkien*, Káng kha 脚港 "river foot." *Kheh*, Kong ha 港下 "river below."

Tasek: *Kheh*, Pa seh.

Tebing Tinggi: *Hokkien*, Soa^{n}-á 山仔 "small hill."

Dindings: *Hokkien*, Kaú sū 九嶼 "nine islands." *Kheh*, Kau chi liu 九子連 "nine links."

Bruas: *Hokkien*, Jit lòh sa 日落沙

Lumut: *Hokkien*, Ang thô· khàm 紅塗磡 "red earth cliff." *Cantonese*, Hung hom 紅磡

Pangkor: *Hokkien*, Pang ko 望閣

INDEX OF THE STREETS.

A kùi ke	Ah Quee Street
À-phièn kong-si ke	King Street
A-iá i-tâm lō·	Ayer Itam Road
A e̍k tò-lūn	Waterfall Road
Âng mô· lō·	Northam Road or Farquhar Street
Âng mô· kū thióng	Northam Road
Âng mô· o̍h chêng	Farquhar Street
Âng mô· sin thióng	Western Road
Bān an tâi	Kulim Lane
Bān Tek hong lō·	Sungei Ujong
Bang-ka-lí hāng	Argyle Road
Batu Gantong	Scotland Road
Bêng hì tâi	Kulim Lane
Bêng san lō·-thaû	China Street Ghaut
Cha̍p chhit keng	Chulia Lane
Cha̍p-jī keng	Queen Street
Cha̍p keng chhù	Carnarvon Street
Che-tî ke	Penang Street
Chhâ kang ke	Bishop Street
Chhâ lō·-thaû	Chulia Street Ghaut
Chhâ tiâⁿ	Maxwell Road
Chhâ tiâⁿ aū	Tek Soon Street
Chhat bok ke	Bishop Street
Chhaú-po· haí-kiⁿ lō·	Esplanade Road
Chhèng io̍k keng	Magazine
Chiú lông lō·-thaû	Church Street Ghaut
Gī-hin ke	Church Street
Gī-hin-ke lō·-thaû	Church Street Ghaut
Gī-hok ke	Rope Walk
Goā koan	Downing Street

Gō· pha teng	Magazine
Gû chhia ke	Prangin Road
Gû chhia chúi	Burmah Road
Gû kan-tàng	Chulia Street
Haí kiⁿ sin lō·	Weld Quay
Hiang-káng lō·	Hong Kong Street
Hô· chio tiâⁿ	Sungei Ujong
Hô· seng kong-si ke	King Street
Hoan-á hì-huîⁿ ke	Kwala Kangsa Road
Hoan-á thióng	Carnarvon Street
Hoé chhia lō·	Gladstone Road
Hong chhia lō·	Brickkiln Road
Hūi chiu kong-si ke	Prangin Road
Iâ kha	Pitt Street
Gia-lân a-teng	Hutton Lane
Jī ông chhù lō·	Residency Road
Jit-lo̍h-tōng lō·	Jelutong Road
Jit-pún ke	Cintra Street
Kam-á hûiⁿ	Dato Kramat Road
Kàm-kong laī	Carnarvon Lane
Kàm-kong-laī hoaîⁿ lō·	Toa aka Lane
Kam kong mâ-la̍k-ka	Kedah Road
Káng-á khaú	Beach Street
Kaú keng chhù	Penang Street
Kaú keng chhù aū	King Street
Kéng kùi ke	Keng Kwee Street
Khài Hêng Bí lō·	Prangin Road
Khaì Hêng Bí bi-ka	Maxwell Road
Ki-lin hō·	Green Hall
Kiâm hû-á hāng	Fish Lane
Kiâm hû tiâⁿ	Prangin Lane
Kièn goân ke	Armenian Street
Kiet-lêng-á bān san	Chowrasta Road or Tamil Stree
Kiet-lêng-á ke	King Street or Chulia Street
Kiet-lêng-á ke lô·-thaû	Chulia Street Ghaut
Koaîⁿ laû-á	Acheen Street
Koaîⁿ laû-á lō·-thaû	Acheen Street Ghaut
Koan-á kak	R. C. O. Front
Koan im têng aū	Stewart Lane

Koan im têng chêng	Pitt Street
Koè káng-á	Bridge Street
Koè káng-á sin lō·	MacNair Road
Koè káng-á tē it tiaû lō·	Magazine Road
Koè káng-á tē jī tiaû lō·	Noordin Street
Koè káng-á tē saⁿ tiaû lō·	Presgrave Street
Koè káng-á tē sì tiaû lō·	Thye Sin Street
Koè káng-á tē gō· tiaû lō·	MacCallum Street
Koè káng-á tē la̍k tiaû lō·	Katz Street
Koè káng-á tē chhit tiaû lō·	Cecil Street
Koè káng-á tē pe̍h tiaû lō·	Heriot Street
Koè káng-á tē kaú tiaû lō·	Sandilands Road
Kóng hok kū hāng	Market Lane
Kū Hô Ha̍p siā ke	Queen Street
Kū Hô-seng kong-si ke	King Street
Kū kha khu	Penang Road
Kúiⁿ-tang ke	Penang Street
Kúiⁿ-tang toā peh kong	King Street
La̍k chhē lō·	Magazine
Làm chhân-á	Carnarvon Street
Lâm hoa i īⁿ ke	Muntri Street
Lâng chhia tèng paî koan	Penang Road
Lêng chiak chhù chêng	Penang Road
Liên hoa hô·	Farquhar Street
Liông san tông laī	Cannon Square
Lô·-lîn ke	Chulia Street
Lū-sòng lé-paì-tn̂g chêng	Bishop Street
Má kaú ke	Penang Street
Mīⁿ soàⁿ ke	Kimberley Street
Oân thaû-á	Prangin Road
Oân-tó· lō·	Bagan Jermal Road
Pak kan laī	Che Em Lane
Pā sat ke	Market Street
Pang lông	Bridge Street
Peng pâng lō·	Barrack Road
Phah chio̍h ke	Acheen Street
Phah chio̍h ke lō·-thaû	Acheen Street Ghaut
Phah phaù ke	Cintra Street
Phah soh hāng	Kimberley Street or Rope Walk

Phah tâng ke	Armenian Street
Phah thih ke	Beach Street
Phah thih ke hāng-á	Toa Aka Lane
Phi chun lō·	Phee Choon Lane
Piāⁿ chhù lō·	Hospital Road
Po lê aū	Union Street
Po lê khaú	Light Street
Pún thaû kong hāng	Armenian Street
Pún thaû kong hāng lō·-thaû	Armenian Street Ghaut
Sìⁿ Iûⁿ kong-si ke	Chulia Street Ghaut
Sìⁿ Tân kong-si ke	Seh Tan Court
Sìⁿ Tìⁿ kong-si ke	Kimberley Street
Sìⁿ Tiuⁿ kong-si ke	Carnarvon Street
Sêng hông biō lō·	Bridge Street
Sek-lân-ni hāng	Love Lane or Muntri Street
Sek-lân-ni lé-paì-tn̂g aū hāng-á	Argus Lane
Sek-lân-ni óh chêng	Farquhar Street
Sì-kak chíⁿ	Carnarvon Street
Sì khám tiàm	Dato Kramat Road
Siā boé	Beach Street (Ujong Pasir)
Siang hó chhù chêng	Leith Street
Sin bān-san	Market Street Ghaut
Sin haí-lâm kong-si ke	Muntri Street
Sin hì-taî	Drury Lane
Sin ke	Campbell Street
Sin ke hoaîⁿ ke	Cintra Street
Sin-ke thaû	Buckingham Street
Sin toā-mûiⁿ-laû	Campbell Street
Sòaⁿ thaû ke	Kimberley Street
Sūn-tek kong-si ke	Bishop Street
Taī jîn koan	Downing Street
Te-chiu ke	Kimberley Street
Te-chiu kong-si aū	Pitt Lane
Tek Sūn chhù piⁿ ke	Transfer Road
Tek sūn lō·	Tek Soon Street
Thaî gû hāng (or thaî gû aū)	Malay Street
Thaî gû hāng lō·-thaû	Malay Street Ghaut
Thaí ko hāng	Muda Lane
Thaû tiaû lō·	Magazine Road
Thó· khò· (or thaú khò·) ke	Beach Street

Tiaù kiô thaû	Penang Road (Titi Papan)
Tiaù lâng ke	Penang Road
Tiong ke	Beach Street
Tiong lō·	MacAlister Road
Toâ ba-lâi	Pitt Street
Toā chhaì huîⁿ lō·	Race Course Road
Toā chhèng khang	Cannon Street
Toā chúi chíⁿ	Chulia Street Ghaut or Pitt Street
Toā ke	China Street
Toā ke lō·-thaû	China Street Ghaut
Toā lō· aū	Perak Road
Toā mûiⁿ laû	Chulia Street
Toā-mûiⁿ-laû hoâiⁿ ke	Carnarvon Street
Toā mûi laû laī	Sek Chuan Lane
Toān lô·-sin	Beach Street
Toān pa-lî	Green Hall

The Orang Laut of Singapore.

" *We tack not now to a Gallang Prow.*" *Kipling.*

At the time of the occupation of Singapore by the British, there were living on the island, then densely afforested, one or two races of natives, known as the Orang Kallang and Orang Selitar. The former of these lived on the river of the same name, the latter along the rivers of the Johore Strait. Some accounts of these two tribes was published by Logan in Vol. i. of Logan's Journal in 1847, and illustrated by outlines of heads. The Kallangs were removed by the Tumunggong of Johore from the Kallang river to Pulai River when the island was ceded to Britain. They formerly consisted of 100 families, but in 1847 the small pox had reduced them to eight. They were said to have lived exclusively in boats, neither building huts nor cultivating any plants. Their language at that time appears to have been Malay, and neither Mr. Logan nor Mr. Thomson who described the Orang Selitar were able to elicit any words of their original language. Of these races it is not easy now to find any traces, as they have become amalgamated with the Malays, adopting not only their language but also their customs and religion. Lately however the authors of this note visited Kampong Roko, on the Kalang river, and made an attempt to collect what information was procurable concerning this interesting people. They were accompanied by Mr. R. H. Yapp (of the Cambridge expedition) who took photographs of some of the older men who were stated to be of this race. Kampong Roko itself is a Malay village of the ordinary type, built on a mud bank of the Kalang river and containing a very mixed population. The natives have for many years employed themselves in fishing and in preparing Nipah leaves for cigarettes-wrappers, so that the ground is covered for a considerable depth with a dense mass of waste fragments of leaves. We visited the village on Nov. 12th, and sought out the oldest inhabitants, the Batin Jenang, and an old man named Rabu, together with one or two others, and spent a long time with them in endeavours to obtain information as to the language, traditions, etc., of the Kalangs, but they seemed to have forgotten most of the language, and but little information could be obtained, though what was obtained was of considerable interest. They affirmed that they were Orang Daik (Malay) from Lingga, and stated that there were at least eight tribes who used to visit this district, and were mostly pirates. They were the

Orang Tambus
Orang Mantang
Orang Galang
Orang Pusek (or Persik)
Orang Sekanak
Orang Barok
Orang Moro
Orang Sugi

The first two always lived in boats, having no fixed habitations, and were not piratical. The rest were all bad pirates, who lived on various islands and travelled as far as Siam and Cochin China on piratical expeditions. In the time of Sultan Mahmud, Raja Lang was the chief of the Galangs, and Orang Kaya Mepar (Che Muntel) was chief of the Baroks, and his grandson is now head. They have a village at Singkep, or as one of the men said, on Lingga. The Persiks now live at Pulau Persik between Retik and Daik. They had a Batin as chief, but no Jenang. The Orang Tambus now live in a village in Silat Durian, among the Riau islands. They had a Batin only. The Orang Mantang lived on Pulau Mantang and were very numerous. They had a Batin. The Orang Galang lived mostly in Pulau Karas, in the Riau Archipelago, and had a Batin only. The Orang Sekanak lived on an island between Pulau Retik and Pulau Daik. The Orang Sugi live near Sulit, in Riau, and had a Batin. The Orang Moro lived in Pulau Moro, near Pulau Sugi; but they were also said to belong to the Orang Daik. It should be noted that among the Sakai tribes of the Peninsula, the Batin is usually if not invariably considered as the superior of the Jenang. Here however at Kampong Roko it was stated quite positively that the Jenang was the higher official.

The following non-Malay words were obtained from these men:

Koyok, a dog. Used by all the above mentioned tribes.
Kiyan, come, come here (lit. thither) cf. Belandas tribe *Chan*.
Kiyun, go away (lit. hither) cf. Belandas *Chun*.

Kiyoh, far off.
Sika, come here, e.g., *Sika makan* come here and eat.

The following words are probably all of Malay origin:

Jengkeng or *bidah*, a boat (sampan or koleh).
Lanchang, a sailing vessel.
O-neh or *O-ne*, friend or comrade, used in addressing other members of the tribe whether young or old, e.g., *O-neh Nan Kamana?* Where are you going, friend? The *O* in *Oneh* may be merely interjectional.
Diko = *engkau*, also used in addressing other tribesmen, but less polite or less friendly than *O-ne*.
Pohon was used instead of *Poko*, tree, as on the East Coast and elsewhere.

The pronunciation was said to be peculiar, thus: *s* was pronounced like a soft *z*, e.g., *Nazi* for *Nasi*; *r* like *h*, e.g., *Parang* for *Pahang*; *k* like *kh*, e.g., *Khain* for *Kain*; *Khakhi* for *Kaki*.

Too much stress however must not be laid upon these examples of pronunciation, as although what was heard is faithfully recorded, the personal equation enters too largely into this sort of questions for them to be accepted without repeated checkings. A Sakai, for instance, will occasionally pronounce one and the same word in two distinct ways, probably through nervousness at being questioned by an European.

Slight as these traces are, if taken in conjunction with the important fact that the constitution of these tribes corresponds fairly closely to that of Sakais (as is shown by the Sakai names of the chiefs) they appear to suggest the theory that the Sea-gypsies of Singapore owe their origin largely from Sakai hill-tribes in the Riau-Lingga Archipelago; that these, whether through pressure of the Malay immigration or from other causes, took to the sea, and reinforced probably by more than a sprinkling of mere Malay adventurers, developed into the famous piratical race which under the generic name of Orang Laut became for a space the terror of all who sailed these Eastern seas. Such an evolution of one of the mildest mannered and most timid races of the earth would certainly appear unaccountable, but if it is to be rejected, it involves us in still greater difficulties. The evidences may be briefly enumerated as follows.

(1.) The constitution of the tribe under Jinang and Batin.

(2). The use of undoubted Sakai words; of these *Koyok Kiyan*, and *Kiyun* are all words allied to those used by the Belandas tribe in Selangor.

(3.) The Sakai "terumba" or racial records as preserved by the Besisi tribe in the Kwala Langat district (Selangor), which explicitly state that the ancestors of the original tribe descended to the sea and became sea-folk (*turun kalaut jadi raiat laut*) and that the sea-folk became pirates (*Raiat laut jadi Bajau*).

Further investigations when opportunities occur may supply more extensive information as to these wild tribes, now so nearly vanished. The foregoing notes, incomplete as they are, show that there are still some records worth the attention of any who have the chance of studying the race, and research in the district of Selitar and Pandan, where the tribe, as late as 1847, were in a very primitive state of civilisation, and in the Carimons, and neighbouring islands, may throw more light on the history and relationship of the Orang Laut.

W. W. Skeat.
H. N. Ridley.

Cases of Lightning Discharge.

By G. E. V. THOMAS, A.M.I.C.E.

Communicated by H. N. Ridley.

The study of lightning phenomena is of great interest and importance, and as the conditions which obtain in Malaya are extremely favourable for the observation of such phenomena, as regards the frequency and violence of thunder storms, it is somewhat surprising to find that the accounts so far available are few. Those here given are of interest as being descriptive of unusual effects.

In well-marked cases of the destructive effect of lightning on trees, the tree struck is completely shattered. Such instances are familiar, probably because they are immediately apparent as the result of a severe storm; but the gradual decay and death of a number of trees in the vicinity of one struck, which would seem to be a frequent after-effect, is a form of damage which, as far as the writer can ascertain, has not previously been noted.

The following account, from the diary of Mr. H. N. Ridley, Director of Gardens and Forests, S. S., describes such an effect, which occurred in a coco-nut plantation in Singapore.

"May 3rd 1898. Visited Siglap and saw a place where, more than a month previously, a tree was struck by a tremendous flash. From this tree in a semicircle (there being none on the outer side) eleven more trees died. The deaths appeared to radiate out from struck tree gradually. Three were still standing; they bore young fruit and flowers, but the whole of the foliage looked as if burnt. One was still alive and putting up a fresh leaf. One, covered with fungi, had been dead some time. Why this progressive death? Inspector tells me he saw a similar case where, some time after the death of coco-nuts, some mangosteen trees withered away in like manner.

A similar instance recently occurred in the Botanical Gardens, Singapore, and was brought to the writer's notice by the same observer. In this case two trees *(Erythrina* and *Detarium)* appeared to have been struck simultaneously. Though the damage apparent was very slight and confined to the bark, decay began in the *Erythrina* within ten days. Another *Erythrina* adjoining died soon after, but the *Detarium* was unhurt. Another example occurred on Government Hill, when a sugar palm was struck (May 2nd, 1899). The writer saw the tree two hours afterwards and obtained the following account from a native eye-witness. "About half past one there was a single peal of thunder, very near, but I saw no flash, only a general glare. Less than one minute afterwards smoke came from the tree and then flames, about half way up the trunk. The fire went up very quickly and I ordered the tree to be cut down." When the writer saw the tree, the fibrous material which covers these palms was still smouldering, but the closest examination failed to reveal any traces of damage other than that caused by fire, and the surrounding trees were quite unhurt. Three months afterwards, however, the similar palms in a radius of twelve or fifteen feet from that struck were completely dead.

A remarkable point in this instance is that although the palm struck was over sixty feet in height, and surrounded by others even taller, the flash should have struck it in the middle. Mr. Ridley has noted a similar case in which an explosion took place in the fork of a Rambutan tree only six feet above the ground between the base of the fork and a birds-nest fern, and set fire to the roots of the fern. There was no damage done to this tree except from burns, but a chicken at its base was killed.

The first of the following accounts, furnished by Mr. A. Knight, is of particular interest, as the phenomena noted were of an unusual kind and did not occur during a storm. Mr. Knight writes:—"On the 12th September, 1898, I was driving home from town, and when in the lower part of River Valley Road I saw a flash in front, and there was a loud report which made my pony start forward. On reaching my house, Grassdale, I found that the ladies of my household had been much startled by the explosion. Two of them had been near the entrance, standing facing towards town, while two others were walking from the direction of town and were about a third of a mile from the house. To the former two a flame-coloured flash seemed to fall in front of them; to the latter two a bright light seemed to be thrown in their faces and the loud report was instantaneous. These two afterwards detected a sulphurous smell, and all felt a sensation like an electric shock. There had been some distant thunder and rain shortly after noon. It had afterwards been bright but stormy looking; and though clouds were gathering in the evening, there was at that time no thunder or lightning. Shortly afterwards there was heavy thunder near, followed by a copious shower. A. K."

Mr. Knight's second account also describes a form of discharge about which very little is known. It is unfortunate that no photograph was obtained, as it would seem from comments in a recent electrical journal that no photograph ever has been obtained of this phenomenon, and it has been customary to discredit statements as to its appearance. Mr. Knight's note differs from the more usual accounts, in which the ball of fire is said to run about before bursting, but is closely analogous to a case quoted by Dr. Oliver Lodge,* in which however the ball is described as of a reddish yellow colour, changing to vivid white. Mr. Knight's account is as follows:—"On the 14th October, 1898, there was a very severe thunder squall—strong wind, violent rain and much thunder, not very distant. It came on suddenly, about 7 p.m., as we were going down to dinner; and as I was about to take my seat at the end of the table, facing the back of the house, I saw an explosion in the air, like that of a fireball or bomb, probably four or five feet above the ground, and there was a loud bang. The light appeared greenish white. There is no doubt that it was in the back garden, as it was located there by some neighbours whose line of sight was at right angles with mine."

Mr. Ridley reports also the two following cases of globular lightning, differing from that of Mr. Knight in that the phenomena occurred outside the storm. "Some few years ago, I was sitting in my verandah, about 7 p.m; it was quite dark, and there was a thunderstorm going on over the Economic Garden. Suddenly there was an intensely brilliant flash and instantaneous explosion close to the house. My back was towards the garden, so that I only saw the reflection of the light. Mr. Feilding was at the time passing along the road below the hill on which my house stands, when he saw a ball of fire descend in a curve, slowly, about 50 yards from the house, close to the ground, between him and the house. It appeared to explode with a tremendous noise. Careful examination of the grass where the ball fell showed no trace of burning or other mark. Simultaneously with this phenomenon, a large tree (*Irvinia*) in the Economic Garden was struck by lightning, but hardly injured. This stroke was the last flash of the storm."

---

* Lightning Conductors and Lightning Guards. Prof. O. J. Lodge.

(2) "A thunderstorm was taking place over the Bukit Timah Road, beyond the Economic Garden, one Sunday about two years ago, at between one and two p.m. The sky was bright, but not cloudless, and the sun brilliant over my house, and I went out on the lawn to look at the distant storm to the North. I saw a zigzag flash apparently about three-quarters of a mile away, and, almost absolutely simultaneously, a peal of thunder came from behind me, and behind the house to the west. I saw nothing to account for this, but Mr. Robertson-Glasgow, who was sitting in a room facing west, saw a luminous body, not ball-shaped, though more or less rounded, moving in a downward curve to the South, till it disappeared behind some trees, and was followed by the thunder. It was less bright than the sunlight."

The only local cases of damage to buildings reported are those at the Cape Rachado and Muka Head Lighthouses. The writer was fortunately able to inspect the former not long after the occurrence, and found it to be an interesting example of side flash, a discharge having left the very fine "Lightning Rod Conference" copper conductor at a bend and made sundry holes in solid masonry walls, traversing two rooms and finally being dissipated over the sheet of rain water collected in a courtyard. The Lightkeeper's report shows that in this case the "expenditure of observers" deprecated by Dr. Lodge, nearly occurred, as the matting under two low wooden beds, on which some of the lighthouse attendants were lying at the time, was torn to pieces. The report concludes:—"In that time Serang, Tindal and two Lascars is inside the room grate of the Almighty pity there had not been anything happen."

The Muka Head case (October 9th, 1897,) affords another example of the inefficacy of the old-fashioned single conductor, which was supposed to protect a building of any size if only it were high enough, and had nicely sharpened points and an earth resistance measuring a fraction of an ohm. From the interesting report by Mr. Wills,* the Lighthouse keeper, it would seem that a flash struck the conductor, leaving evidence by tearing off a gunmetal brace about half way up. The discharge then left the heavy copper rod and proceeded to earth by a thin telephone earth wire, thirty feet of which was completely deflagrated. From some further reports collected by the writer, it would seem that Penang Hill would form an excellent site for observation, as the disturbances noted by the Signal Sergeant stationed there are exceptionally freakful and violent. He states that in April, 1898, a telegraph pole was cut in half horizontally as if it were sawed off." The telegraph wire was also cut in three or four places and three insulators broken. On another occasion, a discharge passed through a large earthenware jar, making one hole of several inches in diameter, and a second of less than one inch, and finally excavating part of the floor near the jar.

An attempt to explain the conditions which serve to bring about results like these is not within the scope of the present notes, but the writer may, perhaps, be permitted to invite further lightning notes, accompanied where possible by photographs. Such records are of the greatest possible assistance in promoting the general knowledge of a series of phenomena about which there is still much to be discovered.

G. E. V. Thomas.

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*Kindly furnished by Mr. O. V. Thomas, Acting J. Supt. Govt. Telegraphs, Penang.

Notes from the Sarawak Museum.

ON A REMARKABLE DIPTEROUS LARVA.

During a recent visit to Mt. Penrissen, Sarawak, I found in sand beneath some overhanging cliffs numerous small pit-falls exactly like those made by the ant-lion; some of these when examined were found to contain a curious worm-like larva which has since proved to belong to a fly of the genus *Vermileo*, family *Leptidæ*. The body consists of 11 segments, into the first of which the head can be completely retracted, five annuli can plainly be distinguished on segments 2, 3, and 4, but are less well marked on the others; the 10th consists only of three. The middle annulus of the fourth segment bears on the ventral surface a fleshy knob (abdominal pseudopod) which is surmounted by a small semicircular chitinous comb longitudinally placed; the eighthsegment ventrally bears a median tuft of setæ, and a fringe of similar setæ marks the posterior border of the 9th segment, this also carries on its ventral surface 2 median setigerous papillæ. The 10th segment, which is set at somewhat of an angle to the 9th, bears on the dorsal surface at its anterior border a fringe of very strong setæ directed backwards. The 11th and last segment terminates in four finger-like processes clothed with delicate hairs, the anus opens on its ventral, two stigmata on its dorsal surface. The last three segments are markedly larger than any of the preceding ones. The larva burrows into the sand head first, until completely buried, and then proceeds to form its pit-fall in the following manner: the more deeply buried tail-end acting as a fixed point, the anterior half of the body is curved about in all directions, each curving motion being followed by a rapid straightening out, which jerks the sand away for some little distance; since the tail is fixed, the result of many of these motions is to produce a circular repression with sloping sides; at the bottom of this lies the larva, ventral surface uppermost, the posterior half of the body still buried, the anterior half exposed and straightened out. If now an ant is introduced into the pit-fall, the exposed part of the larva suddenly curls up in a spiral coil, the prey being generally included in the coil and impaled by pressure on the chitinous comb of the 4th segment; a hold is then gained with the mouth, and after a few minutes, with a rapid sinuous motion, the larva straightens out and disappears below the sand, carrying its prey with it. If the larva is not successful in catching its prey the first time, it flings sand about in all directions by rapid switching movements, and the victim, unable to obtain a foothold on the sliding sides of the pit-fall, falls down to the bottom; or occasionally the larva actually strikes like a snake at the victim as it endeavours to escape from the toils, indeed many of the actions of this larva are quite snake-like, and an ant enclosed in one of its coils reminds one of nothing so much as of a small mammal in the grasp of a python. Occasionally the prey seems somewhat out of proportion to the larva, but by means of the numerous setæ on the large posterior segments a very firm grip is obtained in the sand, and I have never yet seen an insect of moderate size make good his escape after having been once seized. I brought down to Kuching alive several of these larvæ, and one or two pupated; shortly before pupation, the larva leaves its pit-fall and lies close to the surface of the sand, though completely covered: the anterior segments become much swollen and retracted, until the integument bursts, revealing beneath the brownish pupa; by some convulsive movements the whole pupa now appears at the surface, the larval skin being slowly shuffled off backwards, but never becoming entirely freed, so that the posterior end of the pupa always presents a somewhat ragged appearance. Unfortunately the heat of Kuching proved too much for these pupæ, and none came to maturity, but shrivelled up; some Leptid flies which I obtained on Penrissen are, however, I am sure, the adult stage.

ON A MALE SPECIMEN OF PURLISA GIGANTEUS DIST.

A specimen of this handsome Lycænid butterfly was described and figured by Distant in his Rhopalocera Malayana (p. 250. Tab. XXI. fig. 28. 1885), but the sex was not stated either in this or in two previous descriptions (Distant, Ent. Month. Mag. Vol. XVII. p. 245, 1881, and Waterhouse, Aid. Vol. I. pl. XLVI, 1882), and de Nicéville in his "Butterflies of India," Vol. iii. p.

385, writes :—" I have not seen this species. The sex of the specimens described is not stated, and it would be hazardous even to guess from the figures and descriptions what sex they may be."

With the capture of an undoubted male specimen on Mt. Matang, Sarawak, at an elevation of 3,500 feet, in March of last year, I am enabled to state with absolute certainty that Distant described a female, and as the male sex has never been described I now append a short account of it.

Upperside; forewing as in the female, hind-wing with the dark fuscous area much smaller, commencing as a narrow band at the external angle it rapidly narrows to a thin marginal line; costal area grey; underside rather paler than in the female. The inner margin of the hind-wing just interior to the submedian nervure is shortly folded opposite the abdomen, the fold containing numerous long scent-hairs. This sexual character though common enough in the Nymphalidæ and Papilionidæ, is only met with, amongst the Oriental Lycænidæ, in the genus Simiskina. The neuration of both sexes is identical. Mr. H. H. Druce has already recorded this species from Borneo in a paper on the Lycænidæ of the island (P. Z. S., 1895, p. 602), but his specimen was a female.

ON THE FEMALE OF DODONA ELVIRA STAUD.

The male of *Dodona Elvira* was described by Staudinger in " Iris," Vol. IX. p. 239, pl. V, fig. 6, (1896), together with many other new Bornean species. Females of this species are extremely rare, for though I have caught over one hundred males, I have only been able to secure one female; as that sex has never been described, I do so willingly here :—Larger than male. Upperside ochreous; forewing with base broadly shaded with fuscous, a black spot or costal margin continuous with a fuscous discal fascia, a short line of the same colour, closing the cell and almost fused with the discal fascia. Another black spot on the costal margin, continuous with a very pale fuscous fascia, apex and external margin broadly bordered with black. The border containing some obsolescent, ochreous, submarginal spots. Hindwing as in the male. Underside ground-colour more rufous

The fascias are white, tinged with ochreous, instead of silvery, and fascia No. 4 on the forewing is very broad, fusing with the white litura which in the male occurs at the base of the second median interspace. Expanse 48 mm. Matang, 3,000 feet. June 1897.

ON THE SYSTEM OF CATALOGUING ADOPTED IN THE SARAWAK MUSEUM

In the year 1874 an American, Mr. Melvill Dewey, invented and published a system for classifying and cataloguing scientific and other literature by means of employing decimal numbers, this system is known as the Dewey Decimal System. Curiously enough it has received but a small amount of attention in England and her dependencies, a most astonishing fact when one compares its perfect method and simplicity with the systems now in vogue in the majority of large home and colonial libraries. Mr. Dewey is in short the Bertillon of scientific cataloguing, less fortunate than his distinguished prototype, inasmuch as he has still to receive a wide-spread recognition.

The system consists of dividing the subjects, on which literature has been produced, into groups; to each group a number is assigned: each group is subdivided and each subdivision is characterised by a decimal number, following the group number. Thus, under such a number as 600 would be found all works dealing with Geography; a subdivision of this, Europe, would have the number 600.1; Asia, 600.2, etc. The countries making up these main divisions would again have a number—England 600.11, Scotland 600.12, Ireland 600.13, etc., etc., whilst still greater subdivision can be provided for by the addition of another decimal, thus:—Bedfordshire 600.11.1. Naturally enough countless modifications of this system have been suggested and tried.

On contemplating the somewhat chaotic system, or rather, lack of system, employed in cataloguing the zoological specimens in the Sarawak Museum, it seemed to me advisable to re-catalogue the collections by means of a modification of the Dewey Decimal System. Each class of animals was marked with a letter:—Mammals, A. Birds, B. Reptiles, C. Amphibia, D. Fishes, E. Each family of these classes was numbered in order

1, 2, 3, etc., each genus with a decimal number following the family number, each species with another decimal number following that of the genus. Let me illustrate this with an example taken from the catalogue of Fishes.

Class Pisces = E
Order 1. Plagiostomata
Sub-order. Selachoidei
Fam. Carchariidæ = E 1
Genus Carcharias = E 1.1
Species laticaudus = E 1.1.1
    with specimens a. b. c. d.
Species acutus = E 1.1.2.
    with specimens a. b. c. d., etc.
Fam. Lamnidæ = E 2
Genus Lamna = E 2.1.
    and so on.

By this means all necessity of check lists, registers and double entries is obviated; a glance at the catalogue reveals the number of specimens of any given species in the collection, the number of duplicates (if any), the desiderata, the number of species in a genus, of genera in a family, whilst the labels of the individual specimens with numbers corresponding to the catalogue numbers are equally eloquent.

In cataloguing zoological or botanical specimens by this decimal system, one meets with a difficulty which does not occur in cataloguing literature, since literature can be grouped under subject-headings which always remain constant, such as Geography, Geology, Meteorology, etc.; but every biologist knows that new species, new genera, even new families are constantly being created by the systematist, either from newly discovered forms or by the splitting up of old assemblages (for example the Eastern members of the genus *Sciurus* have been recently divided by Mr. Oldfield Thomas into five genera), all of which necessitates the interpolation of new catalogue numbers into the pre-existing series, and I must confess that, as yet, I have been unable to evolve a perfectly satisfactory means of coping with this difficulty. New species may generally be readily disposed of by being added on to those already catalogued, but new genera can not be so treated, since, by so doing, they may be separated from their nearest allies; and the same holds good when treating with new families. It is, of course, necessary when writing the catalogue, to enter and number in order every species, genus and family already recorded from the area in which the collections are made, whether or no the collection undergoing cataloguing contains all those species and genera; if this is done, a double advantage is secured—the dreaded interpolation is only needed when new species or genera are discovered, and the catalogue becomes a complete faunistic list of the collected-over area, and the importance of such faunistic list is well-recognised by every museum curator. My own method of interpolating new genera into a previously catalogued series has been as follows:—The new genus is numbered with a fractional number, the numerator of such a fraction being the number of the nearest ally of the new genus. The denominator the last two figures of the year in which the new genus was described. For example, let us imagine that a new genus closely allied to *Hestia* was discovered this year. The number of genus *Hestia* in the Sarawak Museum catalogue of Lepidoptera is He 1.1. The new genus would consequently be numbered He $\frac{11}{99}$: the number is cumbersome and somewhat destroys the symmetry of the series, but it is significant, and that feature I have endeavoured to hold constantly in view during my re-cataloguing labours.

R. H. Shelford.

The Hot Springs of Ulu Jelai.

BY A. D. MACHADO.

Having recently occasion to visit the extreme Ulu of the Jelai district, Pahang, in connection with certain prospecting operations which I was then undertaking for the Malayan (Pahang) Exploration Co., I heard from Sakai aborigines of the existence of hot springs in this neighbourhood. These springs I found to be situated on one of the spurs of the main range of hills dividing Pahang from Perak, about Latitude 4° 20' N., and Longitude 101° 30' E. Our Sakai guide, who visited this spot ten or more years ago, described the phenomenon as one eruptive fountain of hot water and steam—the water, according to him, ascending to a considerable height, a true Geyser in fact. I saw quite a different thing. I found seven non-eruptive springs of hot water and steam, the former flowing over sloping terraces or basins of granitic boulders, till finally they joined on to a stream called the Chá-âng, which in turn drained into the Jelai. If the statement of the Sakai is credible, and I have no reason to disbelieve him, there has evidently been a change in the structure of these springs, within the short space of ten years, a very short geological epoch indeed. The usual characteristic sulphurous odour pervaded this place ; those curiously fretted rims of the boulders over which the water flowed, due doubtless to the deposition of Silica, sulphur, etc., are also noticeable here. Wild animals, elephants, rhinoceri, deer, etc., visit this spot periodically, judging by their old and fresh tracks, probably for their saline properties, while the Sakais hold this place in great awe and veneration. They seemed quite unable to account for this phenomenon, all the explanation they could give being that they thought it was the work of "hantus." These springs are, in their geological formation, similar to those visited by me in Maliwun, Lower Burma, in Renong, Siamese Malaya, and in other parts of the Malay Peninsula ; though, in point of size and importance, they approximate those of Ojigoku in the Hakone district of Japan.

I feel here tempted to say a word in regard to this little-known district of Ulu Jelai. Doubtless for services rendered, the whole of this district has been assigned, or rather alienated by the Pahang Government to the Datoh Maharaja Puba of Jelai, otherwise and better known as the Toh Raja Jelai, who alone has the right to exploit it. With the exception of a dozen Malays, dependents of Toh Raja, who live at a place called Kwala Betok, the furthest Malay outpost up the Jelai, this district is inhabited exclusively by Sakais. These Sakais plant hill paddy for the Toh Raja and tapioca root for themselves, and do in consequence much unnecessary destruction to valuable timber forests. The ten or a dozen Malays at Kwala Betok have established a kind of an octroi or tithes station, where they exact from the Sakai their pound of flesh for the privilege of cultivating Toh Raja's land, though, to do the Sakais justice, they try by all kinds of subterfuge to evade the payment of these dues—a case of " diamond cut diamond." These Malays will tell you that the Sakais are cunning, unreliable and great cheats; while the Sakais, on the other hand, will tell you that the Malays are hard task-masters, are cruel and merciless—a case again of the "pot calling the kettle black." Taken all in all, this district is fairly rich in economic and mineral products. Rattans are plentiful, and so is Kayu Gaharu (*Aquilaria Malaccensis*) in a lesser degree, while Gutta of almost every description abounds, Gutta Rambong (*Ficus Elastica*) growing wild in places. Of minerals, gold is known to exist; indeed, I have only just located two lodes, which I have my reasons to hope may eventually pay to work. On the Betok, a stream which takes its rise in Ulu Lipis. and which drains into the Jelai at the aforesaid Kwala Betok, having an equal volume of water with the latter stream, tin ore is extremely plentiful and easy to work; so much so, that there is reason to believe that before long a very thriving mining centre will spring up in this corner of the Jelai. The Jelai River, in its upper reaches, abounds in gorges and rapids, formidable obstructions to navigation, thus nullifying its utility as a highway. To those who are venturesome, a descent in bamboo rafts affords exciting experiences.

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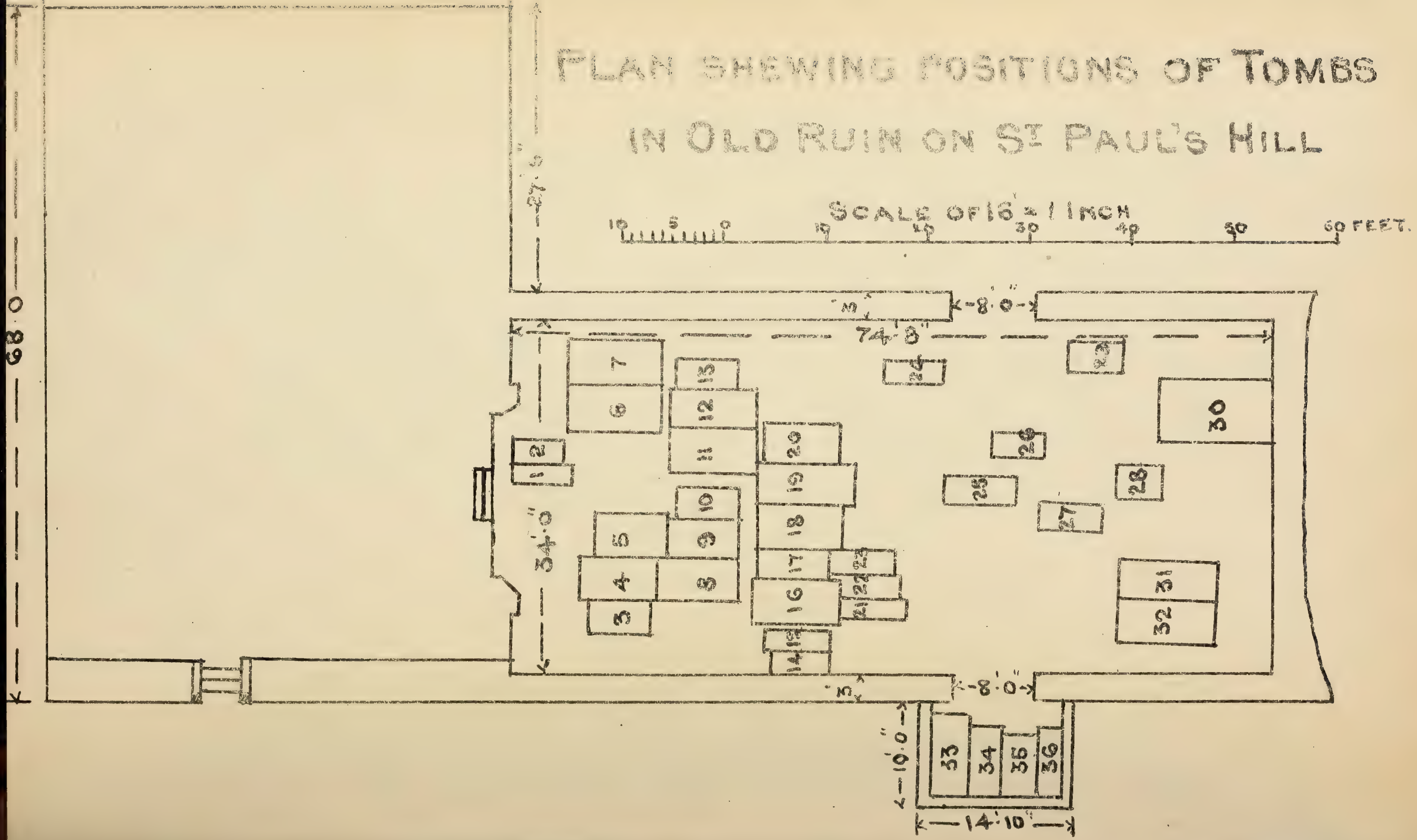
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Inscriptions in St. Paul's Church, Malacca.

The inscriptions on the tomb-stones in the old church of St. Paul at Malacca are of considerable antiquity, the dates ranging from A.D. 1568 to the early part of the eighteenth century, and are of no little interest to the student of the past history of the Settlement.

In some cases, the lettering of the inscriptions and the outlines of the coats of arms are as fresh and sharply-defined to-day as they were on the day when they were first cut. In other cases, on the contrary, the inscriptions are either entirely illegible, or can only be deciphered with difficulty. I therefore seized the opportunity afforded by a temporary residence in Malacca to make copies of all the inscriptions which are still legible, with a view to placing them on record in the journal of the Society, before time and the action of the weather have wrought any further havoc among them.

Curiously enough, while I was engaged in this work, the Acting Col. Chaplain (Mr. J. Hardy) discovered among the old Dutch records a list of the inscriptions on the tomb-stones made in 1713 by one Michiel de Bruÿn, the Sexton, which was of considerable use to me in deciphering some of the more illegible inscriptions. The list is not complete, however, as the worthy Sexton left the Portuguese inscriptions and some of the Dutch ones, which are difficult to decipher, severely alone. A translation of the document is annexed (C).

I have drawn up a list of the inscriptions in brief (A), giving the names and the dates of birth and death, and I also give the inscriptions in full (B), with a translation of each in parallel columns. I further had a plan of the church made, showing the positions of the different stones, which are marked with numbers corresponding to those in the list of inscriptions.

Another Dutch document found in Malacca, of which I give a translation (D), shows that at one time there were a good many coats of arms hanging on the walls of the church, but these have all disappeared.

A few stones, which were lying about loose, were removed several years ago by Mr. D. F. A. Hervey, late Resident Councillor Malacca, to the present Protestant Church (Christ Church) at Malacca, where they still remain. The inscriptions on these are, however, almost entirely illegible.

In concluding these few remarks, I desire to acknowledge the great assistance rendered to me by the late Mr. P. Nuy, Librarian of the Malacca Library, and formerly a member of this Society, in deciphering the inscriptions on the tomb-stones. The two Portuguese inscriptions (Nos. 1 and 24) were deciphered and translated by Mr. H. L Noronha.

E. M. Merewether

Singapore, March, 1900.

A.

List of Inscriptions on the Tomb-stones in St. Paul's Church, Malacca.

1. Pinto da Fonsequa, d. 27th Sept., 1635.
2. Portuguese. Almost entirely illegible.
3. Daniel Massis, b. 21st June, 1658, d. 19th Feb. 1660; and Sophia Massis, b. 21st June, 1664, d. 11th Nov., 1665 (Probably children of Johan Massis.*)
4. Maria Noelmans, wife of Theodorius Zas, d. 14th March, 1660.
5. Hendrik Schenkenbergh*, Opperkoopman, d. 29th June, 1671.
6. Maria Bort, wife of Nicolaes Müller, Onderkoopman, b. 5th Aug., 1639, d. 25th Aug., 1661.
7. Balthasar, infant son of Mathaeus Sonmans and Johanna Rycke, d. 3rd Aug., 1667. Also Johanna Rycke, b. 2nd Feb., 1655, d. 25th Jan., 1673.
8. Mons. Gillis Syben, d. 27 Aug., 1663, and his wife Anna Odame, d. 6th July, 1669.
9. Reynier d' Dieu, Opperkoopman, d. 17th July, 1655.
10. Johanna van Twist, daughter of Johan van Twist,* first Governor, d. 12th June, 1644.
11. Manuel Dumoulin,* Opperkoopman and Sabandar d. 25th July, 1660.
12. No name—3 persons, probably brothers.

Note.—The names marked with an asterisk will be found in the list of Dutch Officials given in Journal No. 13, pp. 55-61.

13. Hendrick van Eeckel, Opperkoopman, b. 20th March, 1619, d. 7th July, 1650.

14. Davidt Walravens, b. 18th Sept., 1623. d. 28th May, 1645.

15. Valerius van Gisteren, b. 19th May, 1614, d. 22nd April, 1646 (? 1664).

16. Theodorus Herbers, d. 18th April, 1659.

17. Partly illegible. No name.

18 Maria Quevelerius, wife of Joan van Riebeck,* Governor b. 20th Oct., 1629, d. 2nd Nov., 1664.

19. Johanna Dumoulin, wife of Balthasar Bort,* Governor, b. 19th May, 1653, d. 17th March, 1676. (Probably daughter of Manuel Dumoulin—see No. 11.)

20. Johan Wilhem van———, d. 26th Nov., 1655.

21. Anganeta Robberts, wife of David Verdonck, d. 26th Feb., 1652.

22. Pieter Pietersen, Deacon, d. 27th May, 1644.

23. Maria van Vliet, daughter of Jeremias van Vliet,* second Governor of Malacca, d. 12th June, 1650.

24. Ricardo Gonsalves (?) and Magdalena Trinidade, his wife, d. 29th March, 1568.

25. Dominus Petrus, Order of Jesuits, second Bishop of Japan, d. at Singapore, Feb. 1598.

26. Agneta Trip, wife of Arnold van Alsem.* Stone erected 14th Feb., 1697.

27. Matthys Jansen, d. 5th Feb., 1673.

28. Sabandar Pedel (?).

29. Nicolaus Basly, d. 9th April, 1678.

30. Tablet. Major Ferrier, 48th Reg't M. N. I., Resident Councillor of Malacca, b. 14th Nov., 1811, d. 24th July, 1854.

31. Theodorus van de Kerckhoven, d. 5th Nov., 1660.

32. Johan van Zÿl—Opperkoopman and Fiscaal,* d. 3rd Jan., 1656.

33. Constantyn Johannes Rooselaar, son of Pieter Rooselaar,* Governor and Director of Malacca, b. 13th July, 1703, d. 18th Jan., 1707. Also, Sophia Huigelbosch, wife of Pieter Rooselaar, b. 24th March, 1674, d. 9th March, 1709.

34. Francisca Barber, wife of Capt. James Barber, d. 10th Sept., 1695.

35. George Cooke, d. 6th Sept., 1712.

36. Hendrick Evertsen, d. 22nd Jan., 1698.

B.

No. 1.

S DE AN^{TO} PINTO DA
FONSEQVA COMENDA-
DOR DA ORDEM DE SAN-
TIAGO PROVEDOR GERAL
QVE FOI DAS FORALEZAS
DA INDIA CAPIAM GERA
DE MAR E TERRA NAS
PARTES DO SUL FALECEO
AOS 27 DE SEZEMBRO DE
1635.

Sepultura de Antonio Pinto da Fonsequa Commendador da Ordem de Sam Tiago Provedor Geral que foi das Fortalezas da India Capitam Geral de Mar e Terra nas partes do Sul Faleceo aos 27 de Dezembro de 1635.

Grave of Antonio Pinto da Fonsequa, Commander of the Order of Sam Tiago formerly Commissary-General of the Forts of India, Captain-General of the Sea and Land in Southern Parts, who died on the 27th December, 1635.

No. 2.

De Ziel Van D'eerste Soon en Dochter nam God mede naar's Hemel's Throon en liet haar lichaem hier benede.

The souls of the first son and daughter God took to heaven's throne, and left their bodies here below.

No. 3.

Hier onder Leggen Begraven Daniel Massis, de Iongste Geboren den 21^{n} Junÿ 1658 Gestorven den 19^{n} Februarÿ 1660 en Sophia Massis, geboren

(Arms.)

Hereunder lies buried Daniel Massis the younger, born the 21st June 1658, died the 19th Feb. 1660, and Sophia Massis, born the 21st June 1664 and died the 11th November 1665.

den 21^{n} Junÿ 1664 en Gestorven den 11^{n} November 1665.

No. 4.

Hier Onder Leÿt Begraven Maria Noelmans Huisvrouw van de Theodorius Zas Predicant in Malacca Godsalichlyk in den Heere Ontslapen de 14^{n} Maert A^{o} 1660.

(Arms.)

Hereunder lies buried Maria Noelmans, wife of Theodorius Zas, Minister at Malacca, who piously fell asleep in the Lord on the 14th March 1660.

No. 5.

Hier Leÿt Begraven Hendrik Schenkenbergh in syn Leven Oppercoopman en Tweede Persoon der Stad en Fortresse Malacca. Overleden den 29^{n} Juny 1671.

(Arms.)

Here lies buried Hendrik Schenkenbergh, in his life Chief Merchant and Second Personage of the Town and Fortress of Malacca. Died the 29th June 1671.

No. 6.

Hier Onder Leyt Begraven Juff=Maria Bort Gewesene Huysvrouwe van Nicolaes Muller Ondercoopman en Winckelier alhier Gebooren Binnen Amsterd^{am} A^{o} 1639 den 5 Augustÿ, en Godsalichlyk in den Heere Ontslapen den 25 Aug: A^{o} 1661 Out zynde 22 Jaeren En 20 Dagen.

(Arms).

Hereunder lies buried Mrs. Maria Bort, who was the wife of Nicolaes Müller, Under-Merchant and Warehouse-keeper here. Born at Amsterdam the 5th August 1639 and piously fell asleep in the Lord the 25th August 1661, aged 22 years and 20 days.

No. 7.

Hier Leÿt Begraven Balthasar Sonmans eenigste soontje van Mathæus Sonmans en Johanna Rycke, Geboren den 30^{en} July 67, en Gestorven den 3^{n} August Desselfden Jaers.

Hier leÿt begraven Johanna Rycke Huisvrou van Mathæus Sonmans eenigste dochter van Isaack Rycke en Maria Bort. Geboren den 2^{en} February 1655, en Gestorven den 25^{en} January 1673.

(Arms).

Here lies buried Balthasar Sonmans, only son of Mathaeus Sonmans and Johanna Rycke, born the 30th July, '67, and died the 3rd August of the same year.

Here lies buried Johanna Rycke, wife of Mathaeus Sonmans, only daughter of Isaack Rycke and Maria Bort, born the 2nd February, 1655, and died the 25th January, 1673.

No. 8.

Wien Echte Hoÿlcx Bandt Gebonden had aen een Rusten oock bÿ Malkaer Hier Onder desen Steen.

Hier Leggen Begraven $Mons^{R}$ Gillis Svben Geboortich van Haerlem in Sÿn Leven Oppercoopman en Secunde Persoon, alhier gestorven den 27^{n} Augu=1663, en de sÿn Huÿsvrouw Anna Odame uit Schravenhage Gestorven den 6 July 1669.

Those whom the bond of marriage had joined together in one, rest also by one another under this stone.

(Arms.)

Here lies buried Mons'r Gillis Syben, born at Haerlem, in his life Chief Merchant and Second Personage, died here the 27th August 1663, and his wife Anna Odame of Schravenhage, died the 6th July, 1669.

No. 9.

Hier Onder Leyt Begraven Reynier d'Dieu in sÿn Leven Oppercoopman in Dienst der E. Comp^{E} Overleden den 17^{n} July A^{o} 1655.

Hereunder lies buried Reynier d', Dieu, in his life Chief Merchant in the service of the Honourable Company. Died the 17th July, 1655.

No. 10.

HIC IACET
TWIST
VAN OMA
PRIM
MAL ATOR
OVIT
AN 164 .
ÆTATIS SVÆ DECM

Note. This inscription is incomplete, and it is not in Michiel de Bruijn's list; but it is probably the tomb of Johanna van Twist, daughter of Johan Van Twist, first Governor of Malacca (1641-1642). She is mentioned in the list of coats of arms as having died on the 12th June, 1644. (See No. 10.)

No. 11.

Hier Leÿt Begraven Manuel Dumoulin, in sÿn Leven Oppercoopman en Sabandaer der Stadt Malacca Gebooren in 't Jaar 1620 den 5 December en Godsalichlÿk In den Heere ontslapen Den 25 Julÿ A^{o} 1660 out zÿnde 39 Jaer en 7 Maenden.

(Arms.)

Here lies buried Manuel Dumoulin, in his life Chief Merchant and Harbour Master of the town of Malacca, born the 5th December 1620, and piously fell asleep in the Lord the 25th July 1660, aged 39 years and 7 months.

No. 12.

Drie die Natuur een huis En't samen woning Gaf Die Leggen Hier Bÿeen Besloten in Dit graf.

Three to whom nature gave one house and joint dwelling now lie here together enclosed in this tomb.

Obŷt { 1647 / 29 December / 25 Februarŷ / 19 Martŷ / 1660 } An^e

Obiit { 1647 / 29 December / 25 February / 19 March / 1660 } An°

(Arms.)

Den Gaffel-Boyer is Ons Grootvaders eerste vondt Ons Vaders Eerste Huis Nu Sluyt se ons de Mondt.

The "gaffel-boyer"* is our grandfather's first discovery. Our father's first house now closes our mouths. (The meaning of this is not clear).

No. 13.

Hier Leght begraven Hendrick van Eeckel Geboren tot Amsterdam In 't Jaer 1619 den 20^n Maert bŷ sŷn leven Oppercoopman En Hooft des Nederlandsz=Comptoir Ligoor overleden den 7 July A° 1650.

Here lies buried Hendrick Van Eeckel, born at Amsterdam the 20th March 1619 : in his life Chief Merchant and head of the Netherlands factory at Ligor. Died the 7th July 1650.

No. 14.

(Arms.)

Hier leidt begraven Davidt Walravens Geboren den xviii September An° mdcxxiii en in den Heere ontslapen den xxviii Maŷ mdcxxxxv.

Here lies buried Davidt Walravens, born the 18th September 1623, and fell asleep in the Lord the 28th May 1645.

No. 15.

(Arms.)

Hier leyt begraven valerivs van gisteren

Here lies buried Valerius van Gisteren of Amsterdam, Chief-van Amsterdam Opperkoopman Gebooren An° mdcxiv den xix May is in den Heere ontslapen den xxii April A° Mdcxlvi.

---

* An old-fashioned Dutch vessel.

Merchant, born the 19th May 1614, fell asleep in the Lord the 22nd April 1646.

No. 16.

(Arms.)

Heic Sepultvs Theodorvs Herbers gf : Obyt : Ætatis nono A° J659 : J8 : April.

Here (lies) buried Theodorus Herbers. Died in the 9th year of his age, 18th April 1659.

No. 17.

(Arms.)

De Gaffel
Boyer is Nyis (Ons?)
Groote Vaders Vond
(ons?) vaders eerste
hyis xv slvyt se
(ons de?) mond

Note. This part of the inscription is incomplete, but it seems to be almost identical with the latter part of No 12.

(Arms.)

Graf dicht
Hier leidt des
Moeders vreuchd
en vaders eerste
Stam die op de
Selfde dag begin
en eynde nam

Close grave.

Here lies the mother's joy and father's first off-shoot, which on the same day had beginning and ending.

No. 18.

Hic Jacet Sepulta Maria Quevelerius uxor Illust=d' Joannes a Riebieck Primi Commendatoris et Fundatoris ar cjs et Coloniæ in Promontorio Bonæ-spei in Africa Sub ditione Societatis India (e) Orientalis nunc-Commendatoris et Præsi-

Here lies buried Maria Quevelferius the distinguished wife of Johannes Riebeck. first Commander and founder of the fort and colony on the Cape of Good Hope in Africa, under the rule of the East India Company, now Commander and Governor of the city and province of Malacca, born at Rotterdam 20th dis Civitatis et Ditionis Malacencis nata Rotterdami A. D. MVIXXIX October XX Denata November II-XVILXIV.

October, 1629, died 2nd November, 1664.

(Arms.)

Wien Rotterdam het Licht Leÿden Que (?) Seden Gaf wiens Troudaqh Hielt Schiedam Leÿt hier nu in dit Graf.

IMWERTM.

She to whom Rotterdam gavn the light and Leyden educatioe, whose wedding was celebrated in Schiedam, lies here now in this tomb.

No. 19.

Ter Gedachtenisse van Jufrouw Joanna Du Moulin Huysvrouw van de Heer Balthasar Bort Raedt Extraordinaris van India Gouverneur en Directeur der Stadt en Forteresse Malacca Overleden den 17° Meert 1676.

To the memory of Mrs. Joanna Du Moulin, wife of Heer Balthasar Bort, Councillor Extraordinary of India, Governor and Director of the town and fortress of Malacca. Died the 17th March, 1676.

(Arms.)

Joanna du Moulin rust onder desen Steen die vroech al toen se Juist twee Maenden en twee dagen min drie en twintich Jaer had 's werelts pad betreen, d'onsterfelyke Ziel quam Gode op te dragen ten uijterste gerust Getroost in God's bedrijf gevoelde sij geen smert in't scheiÿden uijt het lijif.

Joanna Du Moulin rests under this stone, whose immortal soul, when she had trodden this world's path just two months and two days less than 23 years, God came and bore away to its last rest. Submissive to God's will, she felt no pain in parting from the body.

No. 20.

Johan Wilhem Van——— in zÿn Leven Kap^{en} de-

Johan Wilhem Van——— in his life Captain of this garrizes garniz^{ns}, Overleden de 26 Nov^{er} A^{o}. 1655 legt hier begraven.

son. Died the 26th Nov., 1655, lies buried here.

No. 21.

Hier lecht begraven Anganeta Robberts Alma huÿsvrovwe Van den coopman David Verdonck Ovt 29 iaren Sterfde Den 6 Feb. A. 1652.

Here lies buried Anganeta Robberts, venerated wife of the merchant David Verdonck, aged 29 years, died the 6th Feb., 1652.

No. 22.

Hier Lecht Begraven Pieter Pietersen Van Enchuÿsen, in Syn Leven granc Besoecker en de Diaken Der kercke Gestorven 27 Mey Anno d 1644.

Here lies buried Pieter Pietersen of Enchuÿsen, in his life visitor of the sick and Deacon of the Church. Died 27th May A. D. 1644.

No. 23.

(Woman's Arms.)

Hier leght begraven (Maria van) Vliet (Dogter) van (Jeremias van) Vliet Tweede Gouverneur (van) Malacca gestorven xii. (Junÿ) An^{o}. mdcxliv.*

Here lies buried (Maria Van) Vliet, (daughter) of (Jeremias van) Vliet, second Governor (of) Malacca, died the 12th (June) 1644 (?)

No. 24.

Esta sepvltra e de Rcogl (?) he de Madanela Ti (?) nad a sva moher Qve foi Mordomo d' esta Casa de nossa snra madre De Deos mvitos anos ho qval

---

* The inscription on this stone is incomplete, but I have filled it in from the copy in Michiel de Bruÿn's list. There is some doubt about the date, but as J. Van Vliet was Governor from 1642 to 1645, it is probably correct.

Faleceo aos 29 de Marco
d 1568 anos.
Pater Noster.

Esta sepultura é de Ricardo Gonsalves e de Magdalena Trindade (sua mulher) que foi Mordomo d'esta casa de Nossa Senhora Madre de Deos muitos annos o qual faleceo aos 29 de Março de 1568 anos. Pater Noster.	This is the grave of Ricardo Gonsalves and of his wife Magdalena Trindade, who was for many years Majordomo of this House of Our Lady, Mother of God, and who died on the 29th of March of the year 1568. Pater Noster.

No. 25.

Hic Jacet dominus Petrus Societatis Jesu Secundus Episcopus Japonensis Obiit ad fretum Singapuræ Mense Februario Anno 1598.	Here lies Master Peter of the Order of Jesus, Second Bishop of Japan. Died at the Strait of Singapore in the month of February, 1598.

No. 26.

D. O. M.	D. O. M.
Piaeque Memoriae Agnetae Trip Uxoris Castae Foecundæ Dilectæ.	And to the pious memory of Agneta Trip, chaste, fruitful, and beloved wife.
	(Arms.)
Hoc Monumentum Pt. (Posuit) Arnold van Alsem, Fisci Advocatus 14 Kal^{m} Februarÿ MDCXCVII.	This monument was erected by Arnold van Alsem,* Advocaat Fiscaal. 14th February, 1697.

No. 27.

Hier onder Leght begraven Mathÿs Jansen van Thonderen vrÿborger. Is overleden den 5^{en} Februari Anno 1673.	Hereunder lies buried Mathÿs Jansen of Thonderen, free citizen. Died the 5th February 1673.

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* See Journal No. 13 p. 58.

No. 28.

Note. There is no inscription on this tomb, and apparently there never has been any, except the two lines at the foot.

Dusverre streckt het Graf van den Sabandaar Pedel.

Thus far extends the tomb of the Harbour-master Pedel.

No. 29.

Hier Onder Leÿt Begraven Nicolaus Baslÿ, In Sÿn leven vryborger Obÿt den 9^{n} April A^{o} 1678.

Hereunder lies buried Nicolaus Baslÿ, in his life a free citizen. Obiit 9th April 1678.

No. 30.

SACRED
TO THE MEMORY OF
MAJOR FERRIER
(of Belside)
48th Reg^{t} M. N. I.
and Resident Councillor of Malacca. He was born in Scotland 14th Nov^{r} 1811. died at Pringit in Malacca 24th July 1854. This tablet is erected by his Widow.

No. 31.

Hier Onder Desen Steen uÿtgecloven
Leght Theodorus van de Kerckhoven
In Sÿn leven was Hÿ Vader's
En Moeder's Vreugt
Sÿn Broeder Leefde Hÿ
Tot Een Geneugt
Een Jaer min drie Dagen

Was Dese Spruit
Doen God De Zel Deed Gæn
Het Lighaem uit
En ofter Nae Sÿn Uit Vært
Yemant Vroeg
November Vÿf Men Hem
Ter Ædren Droeg
In't Jær Sesten Hondert
En Sesmael Then
Binnen De Stat Malacca
Sag Men't Geschen.

Here in the hollow under this stone lies Theodorus Van de Kerckhoven. In his life he was his father's and mother's joy: he loved his brother dearly. One year less three days was this tender plant when God caused the soul to leave the body: and frequently after his interment people asked about him. On the 5th November in the year sixteen hundred and six times ten (1660) was he borne to earth: in the town of Malacca was the occurrence seen.

No. 32.

Hier-onder lecht Begravn Johan Van Zÿl Geboortich Van Vÿanen in sÿn leven Oppercoop^{m} en Fisc^{l} Deser Stfde Overleden Den 3^{en} Ianuarÿ 1656.

(Arms.)

Hereunder lies buried Johan Van Zÿl, born at Vÿanen, in his life Chief-merchant and Fiscaal of this town. Died the 3rd January, 1656.

No. 33.

Hier rust Constantyn Johannes Rooselaar Zoontje van den E. E. Actbaren Heer Pieter Rooselaar Raad Extraordinair van India Mitsgaders Gouverneur en Directeur deser

(Arms.)

Here rests Constantÿn Johannes Rooselaar son of the very honourable Heer Pieter Rooselaar, Councillor Extraordinary of India, also Governor and Director of this town and fortress of Malacca. Born the 13th

Stad en Fortresse Malacca. Geboren den 13^{n} July Anno 1703 en Overleden den 18^{n} January 1707.

Alsmede Mevrouwe Sophia Huigelbosch gewesene waerde Gemalinne van opgemelde Edele Heer Pieter Rooselaar Geboren binnen de Stad Rotterdam op den 24^{n} Maart Ao 1674 en in 't Kraambedde Overleden den 9^{n} Maart Anno 1709.

July 1703, and died the 18th January, 1707.

Also Mevrouwe Sophia Huigelbosch, who was the beloved wife of the said noble Heer Pieter Rooselaar, born in the town of Rotterdam on the 24th March, 1674, and died in childbirth the 9th March, 1709.

No. 34.

Francisca Barber Cap. Jacobi Barber Uxor pientissima Maritum e Bombaya insula Chinam profectum ultro Comitata ad hanc Malaccam jam gravida mansit Ubi exacto gravidarum termino Dum frustra Batavi Genus Hospitale Hospitis vitae salutique student prius quam levata est fatali onere sub onus succubuit Decimo Die Septembris 1695.

Francisca Barber, most pious wife of Capt. James Barber, who accompanied her husband on his way from the Island of Bombay to China, being great with child, remained here at Malacca: where, when the period of her pregnancy was complete, while the hospitable Batavian people vainly laboured for the life and safety of their guest, before she was relieved of her dread burden she sank beneath its weight, on the 10th day of September 1695.

No. 35.

Vivere Cælicolis terræ tentoria liqui. Vita labor fuerat; Mors Mihi vita fuit.

In certa et constanti spe Resurrectionis hic positæ sunt exuviæ Georgii Cooke quōdā

To dwell with the heavenly host earth's tents I left. My life had been a toil; death to me was life.

In sure and certain hope of the resurrection, here are laid the remains of George

Navis Hoivlādiæ Capitanei Vir Probitate Prœclarus Fidelitate Insignis et variis Scientiis prœditus in reditu a China Obiit 16 Septembris Anno Salutis nostræ 1712 Et Aetatis suæ 36.

Cook, formerly Captain of a Dutch vessel. A man distinguished by his uprightness, renowned for his trustworthiness and endowed with various kinds of knowledge, he died on his way back from China on the 16th September in the year of our salvation 1712, and in the 36th year of his age.

No. 36.

Hier leyd Begraven Hendrick Evertsen in syn leeven Borger Capt. en Vrÿkoopman Alhier Obiit 22 January 1698 out 52 Jaaren.

Here lies buried Hendrick Evertsen, in his life Citizen, Captain and free Merchant here. Obiit 22nd January, 1698, aged 52 years.

C.

Report made by the undersigned sexton, Michiel de Bruÿn, to the honourable Heer Anthonÿ Hansius, Chief Merchant and second personage (of Malacca), likewise first Churchwarden of this Government, regarding the inscriptions which are engraved on the stones in the Church of St. Paul on the hill, and correctly recorded as follows hereunder, to wit.

(Here follow inscriptions Nos. 3, 4, 5, 6, 8, 9, 11, 12, 16, 18, 20, 21, 22, 23, 27 and 29).

Malacca, 17th March, A° 1713. (Sd) M. de Bruÿn.

D.

List of the Coats of Arms hanging in the Church of St. Paul, within this fortress of Malacca.

1. On the right side of the pulpit, in a frame with ornaments:—

The arms of the very honourable Heer FREDRICK GOBIUS, in his life Governor and Director of this town and fortress.
Died the 13th October, A° 1730.

2. Over the pew of the Honourable Council of Police,[*] in a frame:—

The arms of Mevrouw SOPHIA HUŸCHELBOSCH,[†] in her life wife of the Right Honourable Pieter Rooselaar,[‡] Councillor Extraordinary of Netherlands India, likewise Governor and Director of this town and fortress.
Died the 9th March, A° 1709.

3. Thereafter follow, over the same pew, in a frame with ornaments:—

The arms of the very honourable Heer THOMAS SLICHER,[‡] in his life Governor and Director of this town and fortress.
Obiit 18th October, A° 1691.

4. Beside the above follow, between the said pew and that of the Chief Citizens' Company, without a frame:—

The arms of the gallant Military Captain JAN CHRISTOFFELMOM. Died the 25th September (written "7-ber") 1736.

5. Thereafter follow, over the last-mentioned pew, without a frame:—

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[*] In the original "Raad Van Politie." This may mean either a Police Council or Commission, or a person holding the office of Police Commissioner: just as a Member of the Council of Netherlands India is spoken of as "Raad Van India."

[†] See No. 33, in the list of inscriptions.

[‡] See Journal No 13, p. 56.

The arms of the noble Heer GERRIT VERSCHRAGEN, in his life Chief Merchant and second (personage) of this Government.

Obiit, 26th May, A° 1735.

6. Then follow further on, without a frame:—

The arms of the gallant Military Captain ADRIAAN TOOT. Obiit 23rd July, A° 1698.

7. Next hang, without a frame:—

The arms of the gallant Military Captain HENDRICK FEMMER.

Obiit 26th October, 1692.

8. Thereafter follow, towards the wall of the choir, without a frame:—

The arms of Mevrouw SUSANNA SCHAICK, in her life wife of the very honourable Heer Carel Bolner,* at that time the retiring Governor and Director of this town and fortress.

Obiit 4th February, A° 1707.

9. In the middle of the said wall, right over the pulpit, in a frame:—

The arms of Mevrouw ANNA WILDELAND, in her life wife of the very honourable Heer Harmanns van Suchtelen,* Governor and Director of this town and fortress.

Obiit 21st May, A° 1725.

10. Near the above, towards the wall before mentioned, on the other side without a frame:—

The arms of the young lady JOHANNA VAN TWIST,‡ daughter of the very honourable Heer Johan van Twist,§ Governor and Director of this town and fortress.

Obiit 12th June, A° 1644.

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* See Journal No. 13, p. 56.

‡ See list of inscriptions No. 10.

§ See Journal No. 13, p. 55.

11. Thereafter follow, on the side-wall, over the seat of the Treasurer, without a frame:—

The arms of Mejuffrouw MARIA QUEVELERIUS* in her life wife of the right honourable Johannes van Riebeck,† Commander and President here.

Obiit 2nd November, A° 1664.

12. Near the above, between the said seat and that of the last-named officer, in a frame:—

The arms of Mejuffrouw AMARENTIA KOECK, wife of the noble Heer Pieter du Quesne,‡ then Chief-merchant and second (personage) of this (place) likewise pro tempore Commander here.

Obiit 15th November. A° 1730.

13. Near the above, next the door, over the pew of the last-named officer, in a frame:—

The arms of Mevrouw JOHANNA DU MOULIN,‖ wife of the noble Heer Balthasar Bort, † Councillor in Ordinary of Netherlands India, and Governor and Director of this town and fortress.

Obiit 11th March, A° 1676.

14. On the other side of the door, over the seat of the Consistory, in a frame with ornaments:—

The arms of the very honourable Heer GILMEN VOSBURG,† in his life Governor and Director of this town and fortress.

Obiit 19th February 1697.

15. On the left side of the pulpit, without a frame:—

The arms of the youth THEODORUS HERBERTS, son of the noble Heer Gerard Herberts, Chief Merchant and second (personage) of this Government.

Obiit 18th April 1659. Aged 9 years.

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* See list of inscriptions, No. 18.

† See Journal No. 13, p. 56.

‡ See Journal No. 13, p. 61.

‖ See No. 19 in the list of inscriptions.

A Botanical Excursion to Gunong Jerai. (Kedah Peak.)

BY H. N. RIDLEY.

The great isolated mountain commonly known as Kedah Peak, which forms so conspicuous an object in the view from Penang, has been several times ascended by Europeans, but as far as I am aware no account of it has been published. The following description of its ascent may therefore be useful to those who intend to scale it.

I left Penang on June 4th, 1893, in the "Rosebud" launch, accompanied by Mr. Curtis, intending to make the ascent from the village of Yan, which lies at the foot of the mountain and is the best starting point, though there is another route from the Merbau river. The weather was very bad and when we had arrived opposite Yan, a heavy squall came up and we had to fly for shelter to Pulau Song-song, where the water was deep and quiet. With some difficulty, owing to the strong headwind and dense rain which completely hid the view, we managed to get under lee of the island, and shortly after the rain abated we determined as it was rather late to spend the night at Pulau Song-song, especially as the surf was breaking heavily on the coast and would make it difficult for us to land the baggage from the boats. We therefore landed on the island and took up our quarters in a native hut. The village is small and the inhabitants gain their living by catching and curing fish and by collecting turtle eggs. The island is rocky, the prevailing rock being clay ironstone with ferruginous sands and clays. It is thickly wooded with fairly large trees, among which were *Swintonia spicifera* and *Anisoptera Curtisii*, both in fruit. The former appeared very abundant and was very conspicuous on account of its masses of red-winged fruits, but the trees were too tall for us to secure good specimens. Strolling along the shore we collected a few interesting plants, among which were *Atalantia monophylla*, forming a bushy tree loaded with its small green oranges, *Cordia Sebestena*, the iron wood tree of Cocos island, with its showy orange flowers, a pretty Hoya with white sweet-scented blossoms, and creeping over the sandy banks a pretty *Ruellia* with fairly large violet flowers, *R. prostrata*, not previously recorded from the Malay Peninsula nor have I ever met with it since. Orchids were not wanting on the trees by the beach. *Aerides odoratum* seemed common and was in bud, and some fine plants were secured. It seems to have a liking for the sea shore as I have several times found it abundantly on the smaller islets in the Straits in similar localities. *Eria bractescens*, *Cirrhophetalum Medusae*, the common *Cymbidium* (*C. aloifolium*) and the pigeon orchid *Dendrobium crumenatum* were also found but were not in flower. The maiden hair fern, *Adiantum Capillus-veneris*, also grew on the rocks by the sea.

During the night a large turtle landed on the beach near the village and laid about forty eggs in the sand which were easily found next morning by the villagers, as the animal had left a large wide track like that made by pushing down a boat through the sand from its nest to the sea.

Next morning being quite fine we hastened across the Yan. The sea on this coast is very shallow and even small steam launches have to anchor a mile away at least. The mouth of the river is exactly opposite Pulau Song-song. A plantation of coconut palms runs along the coast south of the river, terminating near its mouth, and thus forms a good land mark. The river being tidal is fringed with the common tidal swamp vegetation, the commonest tree being *Avicennia*. The wild date palm, *Phoenix paludosa* is abundant, *Pluchea indica*, *Wedelia biflora* and the common *Acanthus* (*A. ebracteatus* Vahl) are also conspicuous. This latter plant has a great reputation in Penang as a medicine for boils. The seeds are roasted, pulverised and mixed with water, and the liquid drunk. The natives state that the patient will be freed from boils for as many years as there are pounded seeds in the draught. This *acanthus* known here as Jeruju, has the flowers light blue or white, usually the latter in the south of the peninsula and blue in the north and Java, but blue flowers occur in some parts of Singapore. The large and brilliant-flowered *A. ilicifolius*, I have only met with in the Lankawi islands; the prickly holly-like foliage is similar, but the flowers are more than twice as large, and of a beautiful blue.

The village of Yan is not visible from the sea-shore but is situated a few hundred yards from the mouth of the river, which at high water is deep enough to float good-sized tongkangs. There is another route to it through a swampy piece of ground behind the coconut plantation south of the river mouth. This swamp had apparently been under paddy cultivation but at this time was covered with a dense bed of sedges chiefly *Scirpus grossus* which is used in mat making. Among it grew the charming water balsam *Hydrocera triflora.*

The village is of fair size and there are a good many Chinese settled there who make a living by cutting timber on the slopes of the mountain and by making charcoal. Durians, Mangosteens, Rambai, Bachang and other fruit trees are largely cultivated. The Durian trees were of remarkably large size, and all day but especially in the evening and early morning one could hear the crash of the falling fruit. Squirrels seemed to be doing much damage to them and the village children were provided with pellet-bows made of bamboo and rattan, from which they discharged stones at the little animals. So famous are the Durian trees of Yan that the natives gave a half humorous derivation of the word Durian, from Deri Yan.

There were many pepper gardens in the neighbourhood and I also saw coffee, patchouli and tobacco cultivated there, but the latter seemed for the most part to be abandoned. Indigo I was told had been tried but apparently without success.

As in other native states under Siamese influence, such as Kelantan, the women are less confined to the house than in the Southern States and go about more in the villages. There was a good deal of sickness apparently and as the natives had no European medicines and knew nothing about indigenous drugs, there was an extensive levee of applicants for medical treatment every morning. Badly neglected wounds on the feet and legs from falling durians seemed to be the chief ailments.

The Penghulu Rajah, who had been forewarned of my arrival from Penang, very considerately put an empty house—the best in the village—at my disposal, assisted me to procure coolies and sent an armed guard to watch over the house at night while I was there, as well as a patrol who rambled about at night armed with spears and lanterns. The use of the stocks for malefactors was not abolished here, and in one house we saw a native fixed in them by one leg.

The natives recommended that I should start early in the morning for the Peak, as it rained frequently in the afternoon, so it was determined to remain in Yan for the rest of the day. Mr. Curtis returned to Penang and I occupied the time in collecting in the nearest patch of jungle, where were a number of trees hardly or not at all known to me. Among them a large Magnolia (*Talauma* sp.) with very large white fruit with pink seeds, *Strophanthus Jackianus* with its long-tailed orange flowers, a pretty *Elettariopsis* (*E. latiflora*) with white, crimson and yellow flowers, and the shrubby *Bauhinia mollissima* with red flowers, one petal of which is white and yellow, especially claimed attention. Specimens of a small tree called here Nasi Sejuk (cold rice) were brought me by the men. The branches bore a handsome fruit as large and of the same colour as a good orange. It contained several large seeds wrapped in a sweet well-flavoured pulp. The tree proved to be *Salacia flavescens*.

I secured a specimen of a small prettily marked snake with remarkably large eyes and later in the day a large black and white Typhlops was brought me. These were all the reptiles I saw except the common green tree snake *Tragops porcinus* and a very large tortoise which I perceived creeping along the bottom of the river in the early morning as I went down to bathe. It burrowed under the bank and I could not get it out. There were said to be no crocodiles in the river.

About three miles from Yan is a fine waterfall which is well worth a visit. The route to it follows the telegraph line towards Kedah. The fall is visible for a considerable distance out at sea. After remaining a day at Yan, I started with the coolies to ascend the mountain. Passing through a little open country interspersed with woods, one reaches the dense jungle which covers the mountain-side. A guide is necessary for at least the first part of the way, as there are many tracks made by charcoal-burners and timber-cutters, which are likely to lead the explorer astray. The lower woods would well repay a thorough botanical investigation, as there seemed to be very many plants of interest, but time did not permit of a careful search. The path was strewn with fruits and seeds of various kinds fallen from the trees. At one place were innumerable fruits of the ellow flowered *Wormia meliosmaefolia*, at another those of the Minyak Kruen, *Dipterocarpus pterygocalyx*. *Melannorhea Curtisii*, one of the trees known as Rengas, was loaded with its red-winged fruit and formed a conspicuous object. The timber of this tree was in request by the woodmen, and felled trunks could be seen lying in the wood. The heart wood is hard and dark red, and as there is much soft white sap wood, the felled logs are left on the ground till the termites have eaten off the sap wood, when the heart wood untouched by them is dragged to the foot of the hills on buffalo-sleds. *Vitex coriacea*, a small tree, was bright with its innumerable violet flowers which attracted hosts of butterflies. Leeches are rather troublesome in this part of the wood but disappeared in the higher parts of the hill. The track is an easy gradient but long and toilsome and was decided by my boy and the plant collector to be worse than that up Mount Ophir. At one spot a fine view towards the northwest is to be obtained, but otherwise the path is entirely closed in by jungle. At about 2000 feet altitude the flora suddenly changes. The trees are smaller and more slender and the ground in the more rocky spots is covered with orchids and ferns. The path traversed a thick scrub of the curious fern *Oleandra neriiformis* as high as one's head. Here and there were open grassy spots on which grew many pink-flowered Sonerilas, white Hedyotis and yellow Xyris, the latter being a new species described as *Xyris Ridleyi. 7*

The turf was ploughed up at one of these grassy patches by rhinoceros, but the animals were not seen. The camping ground lies in the highest of these spots between two peaks of the range, the highest of which lying towards the south is a thousand feet above it, and is the summit of Gunong Jerai. There is a good stream of water and plenty of firewood here. The rocks consist of quartzite, sandstones, and micaceous schists and piles of stones were pointed out as relics of tin mining operations abandoned some few years previously. A little way below the camp was an outcrop of iron ore (haematite). Close to the hut were evident very recent traces of a large tiger, but nothing was heard or seen of the beast. Kijang were said to be common here, but none put in an appearance. On one occasion I heard in the evening the cry of a Lotong (*Semnopithecus*) but no other animals were seen or heard except one or two small bats. Birds too were very scarce and mostly small species, as at Mount Ophir. Three fine hawks passed over the camp one afternoon, but kept well out of range. Butterflies and beetles were numerous and among the latter I secured a specimen of *Odontolabris gazella* a well known Ophir insect. One of the men caught also a death's head moth, but it escaped his grasp. The flora round the camp bore some resemblance to that of Mount Ophir, many of the trees being of the same kinds; such were the Conifers, *Dammara orientalis*, *Dacrydium elatum* and *Podocarpus cupressinus;* as also *Tristania merguensis*, *Boeckia frutescens* and *Leptospermum amboinense.* The wild Aniseed, *Illicum Cambodianum*, with rosy or white flowers and star like capsules, resembling those of the true Star anise of Cochin China but quite odorless, was plentiful in the woods, but the most striking shrub was a beautiful white *Rhododendron* about twelve feet tall which bore bunches of large white flowers with a yellow centre. A plant well worthy of cultivation, but unfortunately neither seeds nor young plants could be obtained.

Among the smaller plants a charming little sonerila with mauve rarely white flowers, and leaves of every shade of green olive and purple frequently spotted or marbled with white was very abundant. Botanically it was especially interesting from its possessing a tuberous root. *Burmannia disticha* was unusually abundant and fine, both in size and color. One plant was gathered with twenty-six flowers in a head, and growing in masses as it does here its beautiful blue flowers reminded one of the blue hyacinths of the English woods. Another pretty blue flowered plant was a tall grassy leaved *Aneilema (A. giganteum Br.)* which opened its azure flowers only at noon. It was hitherto unknown from the peninsula, though of very wide distribution, occurring in Africa, India, Ceylon, the Malay islands, China and Australia. A curious little sedge, *Scleria Neesii* var *borneensis*, was another important addition to our flora, as its distribution is confined to Ceylon and Borneo. Twining in the grasses close to the stream in damp spots was a pretty *Utricularia* with large yellow flowers. It was described under the name of *U. involvens*, Ridl.

The ascent to the summit of the mountain is steep in parts but there is a good track through the woods which clothe it to the top. The view from the point is very fine and embraces an extensive tract of country, while on the sea side the Lankawi islands can plainly be seen. The height is estimated at a little over 4000 feet; by my aneroid I calculated it to be a little under, viz., 3495 feet. The southern side is quite precipitous with nearly vertical walls of many hundred feet; at one spot not far from the camp a stream runs over one of these precipices so steep that standing on the edge one cannot see the fall of the stream without bending over. Part of the rocky slopes on this side is coated with turf upon which I was about to step when one of the men restrained me and showed me that at a slight push the whole mass slid off from the smooth rock and went down the side of the precipice. On these rock-slopes grew a pretty *Bœa (B. elegans)* the only one I have met with which did not grow on limestone rocks, and with it was an *Arundina* with small flowers, not unlike the *Arundina Philippi* of our gardens. The biggest trees on the top were a species of *Pieris*, somewhat resembling an Arbutus with long racemes of white bell-shaped flowers. A new species of *Hedychium* (*H. collinum*) with white flowers was obtained, but only beginning to flower. A white-flowered *Canscora* was common near the top. It was quite distinct from the one which grows around the Kwala Lumpur Caves, and is the second species obtained in the peninsula, none being recorded in the Flora of British India.

Orchids are far more numerous here than on Mount Ophir, and in places form an important portion of vegetation. In some spots the ground was so thickly covered by them that one was nearly up to the waist in them and had to cut one's way through the masses of tangled stems. Among the most striking were *Spathoglottis aurea*, *Cypripedium barbatum*, *Dendrobium sanguinolentum* and more commonly the pale ochre-colored form *cerinum D. Hughii*, with large thin white flowers tinted with violet, and *D. revolutum*. Bulbophyllums were very abundant, among them were *B. longiflorum* with large pink striped flowers with an orange lip, and B. *hispidum* only met with at the very summit, with clusters of fairly large deep red hairy flowers with a very putrid odour. Upwards of fifty kinds of Orchids were collected here, of which eight kinds were peculiar to the range. As on Mount Ophir *Didymocarpi* were not common and what species did occur seemed to be endemic. Among the most conspicuous Ophir plants absent were *Rhododendron Malayanum* and *R. jasminiflorum*, *Arundina speciosa Dendrobium uniflorum*, *Cladium Maingayi*, *Lepidosperma Chinense* and *Balanophora*, but this latter being often rather deeply buried in the soil may not be discoverable unless in flower, and may perhaps be found later in the year. On the whole the flora most resembles that of Mount Ophir and is very different from that of the Main Perak hills. The flora of the Lankawi islands which one can see at no great distance from Kedah Peak and where so many remarkable plants have been found by Mr. Curtis is very distinct from that of any part of the peninsula, having in fact a closer relation with that of Tenasserin. I had expected to find on Kedah peak traces of this northern flora, but there was nothing of the kind, the plants are typically Malayan. I remained on the mountain for six days during which the weather was tolerably fine. Rain fell however almost every night. The temperature is fairly cool, the thermometer falling to 70 at sun down. Mosquitoes occur at the camp, which is unusual at this elevation, so those who are troubled by them would do well to take mosquito curtains. The expedition including going from and returning to Penang has, I believe, been done in a day, but it can hardly be worth the labour it entails to make so hurried a visit. The ascent from Yan takes from 3½ to 4 hours, and if wet it will probably take longer as the track becomes very slippery after rain.

On the Use of the Slow Loris in Malay Medicine.

BY H. N. RIDLEY.

The following instructions for the medical and magic uses of the Loris, were copied some time ago from a manuscript in Malay, and are excellent illustrations of Malay ideas as to medicine. In many respects these receipts recall European medical ideas of some four centuries ago. The notion that one drug will act beneficially in all diseases that flesh is heir to is by no means extinct among the more ignorant classes at the present day, while the use of animals, especially if of strange and uncanny appearance, simply because they were odd looking, was formerly quite common in Europe. Thus the viper, and the scinc (*Mabuia*) were valued highly as late as 1694. (Pomet's Drugs). Still earlier toads, bats and other such animals were used in magic as the Loris is among the Malays and Indians to this day.

The Kongkang, or Slow Loris (*Nycticebus tardigradus*) is common all over the peninsula and also occurs in India. Its strange appearance with its large eyes and ape-like hands, its nocturnal habits and its manner of covering its eyes with its hands, have stamped it in the eyes of all Orientals as an uncanny beast closely associated with demons, which it is supposed to have special facilities for seeing. I have been informed that its tears if applied to the eyes impart such clearness of vision that the person using it is able to see ghosts. The method of obtaining the tears is to take the animal among a herd of cows when it commences to weep, but another plan which indeed sounds more likely to succeed was to wrap the animal's body in a white cloth, and throw pepper in its eyes. The tears are collected on a bit of cotton.

Five varieties of the Loris are recognised by the Malays, viz., the Kongkang ayer, the common grey forn, so called because it is said it can swim ; Kongkang angin, which is black. This variety is said to have the power of vanishing when a storm arises, if it is merely tied with a string in a house, but if confined in a cage it cannot do. Kongkang api is red with a white mark on its forehead and nose. Kongkang orang is brownish with a red line over its head and down its back. The white variety Kongkang puteh or Kongkang Kayu is very rare and is the most valuable one for magic purposes. It derives its second name from the peculiar property of causing a tree to fall in any desired direction. To effect this it must be either found dead or killed in a special manner known only to an initiated few, its bones are then laid in a row in the direction in which it is desired that the tree shall fall when felled and the tree will fall exactly on the bones.

In cutting up a Kongkang for magical purposes it is necessary that the knife used shall be ornamented with gold. The skull if put in a hole in the ground beneath a house will cause ghosts (hantus) to appear. The fur if burnt and given to a woman to eat will cause her to like her husband however much she may have previously disliked him.

PASAL PERGUNA'AN KONG KANG.

Ayer mata-nya itu jika di pakai pada badan kita yani di masokkan k-dalam suatu bekas di-pakai sperti azimat, Insha Allah sklian yang mmendang kita kaseh sklian-nya.

2. Darah-nya jika di champor dngan dawat di tuliskan azimat Insha Allah mustajab barang perbuat tau-nya, dan jika di champor dngan ayer susu manusia di sapukan pada mulut periok, mlainkan tiada masah nasi itu.

3. Prot-nya itu di jmor kring kring dan apabila kita handak naik rumah orang di asah dngan ayer embon dan jebat di sapukan di dawah lantai-nya nschaya tertidor orang yang di dalam rumah itu dan tiada ktahui kita naik rumah-nya itu, dan jika di sapukan pada binatang yang buas buas, sperti Harimau, Sapi, atau Gajah terplihara deri-pada kjahatan-nya, dan jika orang sakit di asah dngan kulit dedak sdikit di-bri minum nschaya semboh.

4. Prot-nya itu jika di-bri kring kring apabila ada prempuan susa hndak beranak di asah dngan mempedu-nya dan ayer

mawar di sapukan pada ari ari-nya prempuan itu nschaya kluar anak-nya itu.

5. Mata-nya yang kanan itu jika di lumatkan di champor dngan susu orang atau susu kambing dan minyak Yatmon di champorkan pada surmoh di-buat chelak nschaya trang mata yang kelam dngan kuasa Tuhan.

6. Mata-nya kiri itu di lumatkan halus halus di champor dngan ayer Mawar, ayer madoo dan kapor barus, di buat chelak mata atau di makan dngan sirih yang bertmu urat nschaya kaseh orang mmandang kita, dan jika di bri makan pada binatang yang liar mnjadi jinak.

7. Hati-nya itu jika di kringkan baik baik pada panas kmdian di lumatkan dan di champor dngan minyak Ziton dan di sapukan pada (Zakar) bawa jinak terlalu lazat, dan jika di tanam pada rumah kita jadi hormat rumah itu.

8. Tulang blakang-nya jika di tanam di bawah pintu rumah kita mlainkan tiada boleh pnchuri masok.

9. Tulang kaki-nya itu jika di kolom di dalam mulot di bawah berchakap-chakap di hadapan Raja raja lmah lahya berbuat dhalim di atas kita dan jika di masak dngan minyak ular atau harimau atau minyak ziton di sapukan pada kaki orang yang lemah neschaya affiat olehnya.

10. Paruparunya itu jika di tampal pada pintu orang melainkan bercherai berai orang rumah itu.

11. Jantongnya itu di kringkan di ambil satu (kerat) dan di asah dengan (mani) kita di bri makan perumpuan neschaya kaseh dia dengan kita.

DIRECTIONS FOR THE USE OF THE LORIS.

1. If the tears of this animal be worn on the body, we can place them in a small case and carry as a sacred wand. All persons beholding our countenance shall by God's will bear an affectionate feeling towards us.

2. Its blood may be mixed with ink, and written with as a sacred writing, by the will of God any business will prove successful; and it can be mixed with milk and rubbed on the mouth of a pot, when the rice which is to be cooked will never be done.

3. Its gut is to be dried, and when we want to use it, take a piece and rub it on a stone with dew and civet; when rubbed below the floor of a house, the inmates will fall asleep and will not know we are getting in, and if rubbed on wild anmials such as tigers, oxen or elephants, the person approaching will be safe from harm, and if ground up with a little bark of Dadup *(Erythrina)* and given to a sick person it will cure him at once.

4. The gut when dried and ground with its gall together with rose water and rubbed on the abdomen of a woman in confinement, will assist to cause delivery.

5. The right eye dried and ground to powder and mixed with human or goat's milk and some sweet oil may be used as an eye ointment which will make dim sight bright by the will of God.

6. The left eye ground fine and mixed with rose water, honey and camphor *(Sumatran)* can be used as an eye ointment or eaten with sirih leaf, the nerves of which meet together causes all who look on us to love us, and if given to a wild beast it will become tame.

7. The heart well dried and ground and mixed with olive oil and rubbed on acts as an aphrodisiac and buried in the front of a house makes it appear respectable.

8. If its backbone is buried beneath the door of the house we can prevent thieves from entering.

9. If the bone of its left leg be kept in the mouth during a conversation with a rajah, it will prevent his doing any acts of tyranny to us, and if we cook it with oil of snake or tiger or olive oil and rub it on the feet of a weak person, it will strengthen him.

10. If its lung is placed beneath the door, the people of the house will be separated.

11. If the liver be dried and a piece taken and rubbed up and given to a woman to eat it will produce in her feelings of love towards us.

A Review of Dr. A. B. Meyer's "Negritos."

By R. N. Bland.

A pamphlet with the above title has recently been presented to the Library of the S. B. R. A. S. by the author. It is a translation from the German of two chapters of a larger work, published in 1893, dealing with the Negritos of the Philippines, and is confined to a consideration of the distribution of the Negritos within the Philippines and beyond.

The author, who is the Director of the Royal Zoological, Anthropological and Ethnographical Museum at Dresden, is a scientific traveller of established reputation. He has since 1875 published over 20 volumes on Anthropological and Ethnographical subjects connected with the far eastern Archipelago. The subject is one that possesses a particular interest in this "corner of Asia," as amongst the natives of the Peninsula we have tribes representing the ancient race of Pigmy negroes, small black men with frizzy hair concerning whom science has speculated since the time of Herodotus.

Jakuns, Sakai, Semang, Orang Raiat, Orang Bukit, Orang Panggang, Belenda, Bidnanda are some of the names by which these people are known in different parts of the Peninsula. Possibly the Orang Laut, who to this day inhabit the villages at the mouth of the Rochor River, in the harbour of Singapore, and even the curly-headed "have-a-dive" boys of New Harbour are also related to this ancient people, but this is still an open question.

The author concerns himself only with the distribution of the Negritos in the Far East—that is, where these people are to be met with and where not. In support of his arguments he quotes over 200 different authorities, and more often than not, differs from them.

The writers that our author quotes most, and differs from most violently, are MM. de Quatrefages and Hamy, both of them anthropologists of renown. To readers of this Journal, the criticisms of the views of M. de Quatrefages will be of interest, as some of these views are set forth in two articles entitled the "Pigmies" published in Nos. 11 and 13 of the Journal, S. B. R. A. S. Let us take some of these references in detail.

P. 23. "The most prolific writer on the Negritos is de Quatre- "fages, who published a monograph in the year 1872, entitled "Etude sur les Mincopies et la race Negrito en général" . . "and then in 1882, together with Hamy, the 'Crania Ethnica.'

"I will not enter into a detailed discussion of this writer's "partially fantastic ideas on the Negrito question. Time will "decide whether the views advanced by him with great cer- "tainty will hold good, in that traces of the Negritos are found "nearly everywhere from India to Japan and New Guinea, and "that Negritos and Papuans live together in New Guinea and "elsewhere, owned and intermixed, differing from the true Pa- "puans" . . . The same illustrations too are continually "reproduced . . . . De Quatrefages' literary references are "frequently untrustworthy. He is in spite of his shortcomings "respected by many writers as a reliable authority, etc., etc."

The "Crania Ethnica" is a constant stumbling-block and rock of offence to our author. He writes of a certain skull described as coming from Borneo. P. 26. "The mischief caused by this "Negrito skull will be carried on in books for some time to come "in consequence of this frequent repetition." He is strongly of opinion that the existence of Negritos in Borneo has not yet been proved, and is much annoyed with M. de Quatrefages for assuming the contrary on the evidence of a solitary skull.

Writing of the Moluccas of Lesser Sunda isles, our author disputes an opinion of Prof. Flower regarding the existence of a "small Negroid population" in certain islands. "He is" he says, "surely adopting, absolutely without the test of criticism, "de Quatrefages' more recent statements (Les Pygmées, 1887) which are more or less figments of de Quatrefages' imagination," etc.

Again (with reference to Negritos in Java), "Flower ap- "pears here again to follow de Quatrefages (Pygmées, 1887)

" blindly, but the statements in question are very much open to " controversy." As in the case of Borneo, Mr. Meyer holds that the existence of Negritos in Java has not been proved.

In examining the evidence as to Negritos in Formosa, Herr Meyer again falls foul of " Crania Ethnica " and writes, " For to " conclude the occurrence of a race in a country from certain " characters in two skulls, when this race has not yet been registered from that country, is in the present embryonic state " of craniology, an unwarrantable proceeding, and the two " French writers will certainly find no follower in this respect, " except such as simply copy their assertions."

Here Meyer disputes the existence of Negritos in Japan, on the evidence of certain skulls described by Hamy. He writes : " In consequence, this Negritos Japanese skull found its way into the 'Crania Ethnica' and was duly recorded in all the writings of de Quatrefages and in many others."

As regards China, Herr Meyer equally questions the evidence as to Negritos. " De Quatrefages and de Lacouperie " looked upon each other as authorities, the assumption of the " one standing for truth to the other, and *vice versa;* in conse- " quence they tried to support each other, but it is more than " questionable whether others will have the same belief in the " categorical statements of these two writers."

In short, as regards the Dutch possessions, China and Japan, Herr Meyer finds that all accounts of Negritos outside the Philippines are traced on very poor evidence, or properly speaking on none at all. He reminds one of the famous chapter in the " Natural History of Iceland " headed " Snakes—There are none." Professor Meyer goes on to discuss the Negritos question as it concerns the Malay Peninsula, the Andamans, the Mergui and Nicobar Islands, Anam, Cochin China, Cambodia, India, Australia, and New Guinea. He glances (p. 72) at the question as to whether we are to regard the Negrito people as the little modified descendants of an extremely ancient race, (" gens prisca mortalium ") the ancestors of all the Negro tribes, or whether they may be regarded as a type of comparatively recent growth, retrograded to their present condition after centuries of isolation and confinement to a limited space. " For at " the present time our knowledge of the mutability and amount of "variation in organic form and their result is still so inadequate, "that it is extremely rash to speculate in this general manner on "the genetic connection of races, and doubtless easier to set up "a clever hypothesis than to prove its full legitimacy, let alone "necessity."

In his conclusion he deplores the practice of describing skulls in detail "which will never lead to profitable results." He thus takes a final shot at the "Crania Ethnica." "Whoever "wishes to obtain an idea of the chaos which reigns here let him "read the 'Crania Ethnica' of de Quatrefages and Hamy: he "would need Ariadne's clue to find his way in this labyrinth of "skull descriptions."

He appeals to "some able investigator" to dedicate his powers to the Negritos of the Philippines (as the Saranies have done for the Weddas), and hopes that later generations will attain to the "heights of knowledge" and be able to look back to the present time with its gropings in the dark, its daring hypotheses, its paucity of facts, as the childhood of Anthropology.

A List of Brunie-Malay Words.

COLLECTED BY H. S. HAYNES.

NOTE. In Brunie-Malay the final *k* sounds *strong*.

There are a number of obsolete Malay words in common use here—such as *tapih*, a short sarong, but as they are to be found in the dictionary of L'Abbé Favre I have not put them in this list. Here many Malay words are altered slightly, as for instance *lari* for *layer*, a sail (*lari berlari*, to sail.)

GAYA, 27th May, 1900.

Achang	The tame pigeon.
Ajie	The chin.
Alak Alak	The uvula.
Ali Ali	Separate.
Alun Alun	A road.
Ambok	A monkey.
Ambulong	Raw sago.
Ambuyet	Cooked sago.
Ampas	Accent.
Ampol	Light (not heavy).
Ampuân	A title of rank.
Ampus	Asthma.
Anchow	A fine net for catching Bubuk, made of Sadok.
Andang Andang	From the beginning.
Andiang	The frond of the Cocoanut palm.
Ang-up	To stutter.
Anus	The cuttle fish.
Arang Atasan	Soot.

Arap Arap . .	To cut up small.
Arik . .	To call.
Arok, Mengarok . .	To thrust a spear up through the floor of a house.
Aukup, Snapang . .	A breech-loader.
Aumpok . .	A box made of Selad leaves.
Auras . .	Rubbish.
Aurok . .	To open.
Ausai . .	To settle. To arrange matters.
Ausus . .	A bradawl.
Autik . .	Cataract of the eye.
Babat . .	To tie.
Babau . .	Dumb.
Badong . .	An eel.
Baguring . .	To roll.
Bakat . .	A scar.
Bakut, Membakut .	To heap up.
Balan . .	Steel.
Balong . .	Jelly-fish.
Balot . .	Bêche-de-Mer.
Bangas . .	Sour. Stale.
Bangkawat . .	The rainbow.
Bangking . .	A bug.
Banun . .	A herd of cattle.
Bari . .	Steel.
Basak . .	A fisherman's basket
Basing . .	A squirrel.
Baston . .	A walking-stick.
Batah . .	A long time.
Batak . .	To rob. Cattle-lifting.
Baul . .	Brackish (of water.)
Bawet . .	Cycas revoluta.
Bayung . .	A bag made of rushes.
Beabas . .	Guava (fruit.)
Beading . .	Shark's fins and tails.
Beli . .	A stick of tobacco.
Beluri . .	To get, to catch, to obtain.

Bengkatang	The Proboscis Monkey.
Benukal	An earthenware jar.
Berbakut	To box. To fight.
Berkami	To make water.
Barega	To proclaim.
Berling Katak	A frog.
Berling Karong	A grass lizard.
Bergalop	To play. To act the fool.
Berinyut	Slowly, by degrees.
Berkrapak	To speak.
Berleon	To go round.
Bêlusier	To run.
Bertangar	To pole a boat up stream.
Bertapak	To hide.
Betian	Pregnant.
Blani	An earthenware jar.
Blatak	A basket.
Brian	Money, or goods paid for a wife.
Bubuk	The small shrimp.
Bubut	To follow, to chase, to pursue.
Bubus	Worn in holes at the bottom.
Bujak	A spear.
Buli Buli	Sand fly.
Bunga Lapang	The white crest on the waves, (breakers.)
Bunga Takat	Sponge.
Bungkutut	The fresh water shrimp.
Bungal	Deaf.
Bungal	The sea turtle.
Bruet Ruet	Barbed as a fish spear.
Buyuk	To cheat.

Chabok	A bathing bucket.
Chaka	Industrious.
Chakal	To wrestle.
Chandas	Chinese chop sticks.
Charok	The bow of a boat, or ship.
Chuet	A plate.

Damal	Damp.
Damit	Small.
Dapong	A boat with outriggers.
Dudus	Mutilated.
Dugal	Spleen. Nausea.

Eno	Phosphorescence of the sea.
Epong	An earthenware jar.

Gabus	Proud.
Gadong	Green.
Gagar	To shake.
Gagas	In haste.
Gaggo	To be busy.
Gaggut, Bergaggut	To make a disturbance.
Garit	A scratch.
Gauk	Wicked. Naughty.
Geok	A worm.
Gaul Bergaul	To sound a gong.
Gubong	A dug-out canoe.
Gucho	An instrument for pounding betel nut.
Gulian	Vegetables.
Guling Tangan	7 or 8 graduated gongs.
Guntian	Thread for sewing.
Gureding	A Jew's harp.
Gusey	A sacred jar.

Hias	To make haste, to spurt, to finish.

Inda Inda	Different kinds of things.
Indek	To kick.
Indong	Mother, of animals.
Ingut	To shake in a pile.

Jagau	Tall.

Jahat Nawa	Sick, unwell.
Jelamah	A human being.
Jenguni	The Nicobar pigeon.
Jurong	Oval.
Kaban	A box.
Kalabutan	The cuttle fish.
Kalakati	Betel nut scissors.
Kalas	Light red colour.
Kalat	Rope.
Kalindo	A jungle spirit.
Kamah	Dirty.
Kanowi	The white paddy bird.
Kapunan	Misfortune.
Karo	Stiff.
Katawi	A place for paddy.
Katrahan	A place for fowls to lay and sit.
Keap	A fan.
Kelala	To recognize.
Keri	The eye brows.
Keri	Nepa leaves used to make cigarettes.
Kubut	An earthenware jar.
Klakar	To speak falsely.
Kudut	A plate.
Kuling Bambong	A butterfly.
Kuling Papat	A firefly.
Kuratu	In times long ago.
Kuroh	To snore.
Lago	To call.
Lakat	To remain, to stay in a place.
Lalam	Rain when the sun shines.
Lalap	Meat dried in the sun.
Lambu	The Illanun boat.
Lampo	Stout, fat.
Lamunta	Raw sago.
Langis	Clean.

Langong	A cooking pot.
Lanto	A bad smell.
Lasak	Bald headed.
Lasuk	A basket.
Lauangan	A curtain.
Lauk	Live or fresh fish.
Lechak	Soft.
Lekup	The small hornbill.
Limpaku	A passage between the coral reefs.
Limpong, Malimpong	To lie down.
Lulan	A seam, a hem.
Lulup	A woolly kind of stuff obtained from the Bengkola Palm, used to caulk boats.
Lundong	Lazy.

Malagas	Bald, leafless.
Malangup	To open wide the mouth.
Mandu	10 Gantang measure.
Mata-Mata-i	To mend a net.
Mauk	To vomit.
Menggagap	To feel about in the dark.
Meris	Leaky, not water-tight.
Maritam	Pulason fruit.
Mais	Orang utan.
Moah	The face.
Mungalimut	To slander.
Muli	To return, to go home.

Nandong	The dragon fly.
Napu	Sago flour.
Nyanat	To repeatedly commit the same offence.

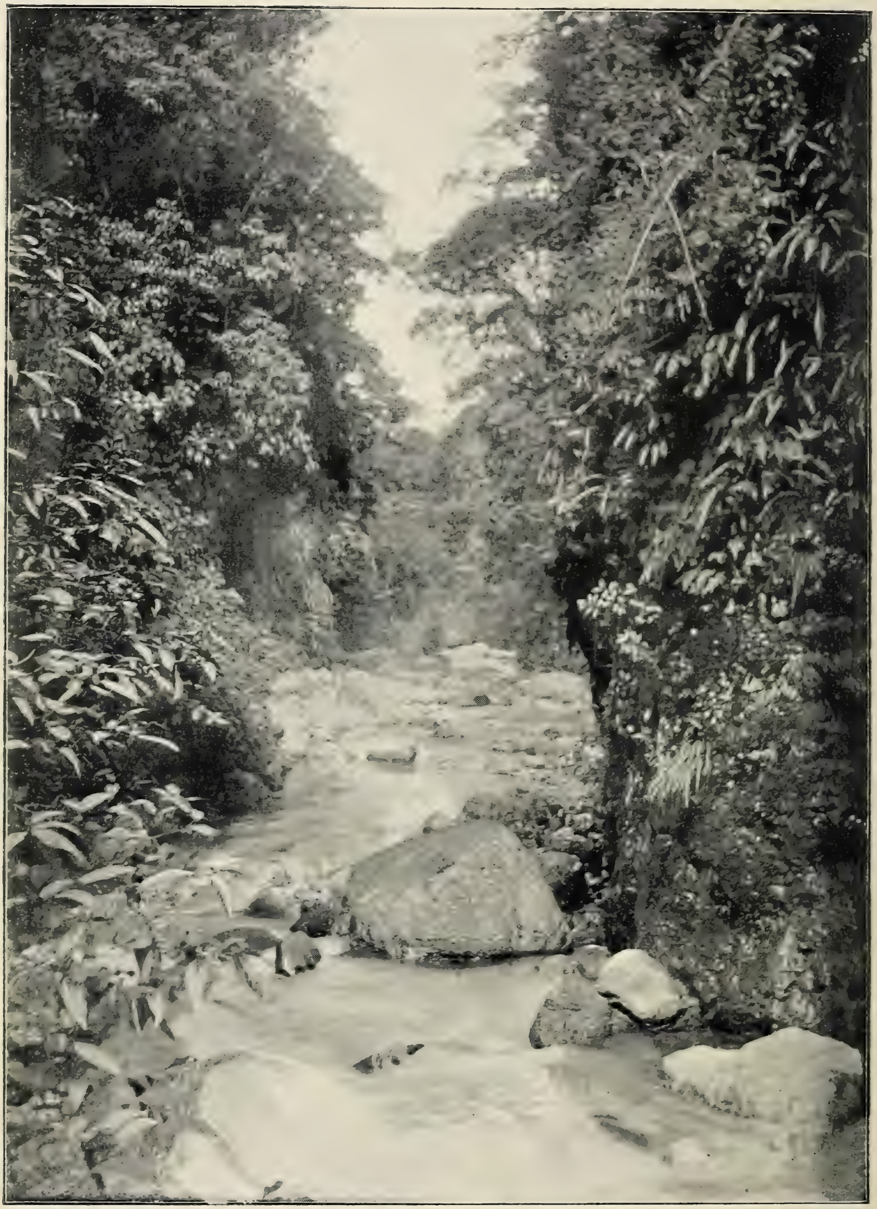
Pajah	To put out a light.
Pajal	To force.
Pakaram	To fish.
Pakarangan	A fishing boat.

Pakul	A saddle.
Palowi	A fool.
Pampangan	Stocks, place of punishment.
Pandiang	A prostitute.
Pandidip	Matches.
Panggal	To cut in two.
Panguling	A midwife.
Panyangat	A wasp.
Papak	To chew.
Pantaran	Verandah.
Paropok	Bamboo grass.
Patungut	A fire stick.
Peasow	The cocoanut palm.
Pengaluru	To mock.
Pengambat	A travelling trader.
Peratasan	The watershed.
Petang	Dark. Darkness.
Piho	Deer (Cervus.)
Piok	To handcuff.
Porok	Earth eaten by the natives.
Puchok Rabong	The gums.
Pundok Pundok	To sit idle.
Pungarusan	A charm attached to a fishing net.
Pungaut	A rice spoon.
Pungar	A dead tree.
Puputan	Bellows.
Rahap	A shroud.
Radu	A plough.
Rambat	A casting net.
Ranik	Small, as leaves.
Rangit	Mosquito.
Ranggas	Leafless.
Repow	The refuse of sago.
Rampok	To shake out.
Rogat	Torn ears.
Rumbia	The sago palm.

Runding	To make up an account.
Sabang	A pass between the reefs or sand banks.
Sabal	Blunt.
Sabat	A knapsack.
Sadok	A kind of coarse canvas.
Sadi	To dry a boat.
Sadian	A boat shed.
Salajur	At once.
Salambo	A fishing net.
Saling Kawang	Bracken fern.
Samandak	A heifer.
Sumba Sumba	Mantis (Praying Insect).
Sambat Sambat	Early in the morning.
Sampar	An evil spirit.
Sangup	A fish spear.
Sapar Sapar	Divided.
Sarah	A box.
Sarang Sarang	A dish cover.
Saroung	A conical hat.
Sarudong	A hut built on the floor of an unfinished house.
Sawang	A hole.
Sear	A shrimp.
Sebur	Raised divisions in the paddy fields.
Segi	Cowry-shell.
Segup	Tobacco.
Selering	A fishing net.
Sepok	Having an extra finger or toe.
Sekup Keri	Left-handed.
Sekut	To carry on the back.
Selankier	The starling.
Serah	Salt.
Sering	The edge. Sea shore.
Sêrong	The spaces between the posts of a house.
Sêut	A landing net.

Spurdian	Of one family.
Stagal	A little time.
Stampik	One side.
Sulup	A hut, a shelter.
Sumbrana	Careless.
Suri Pimping	A kind of bamboo grass.
Suroh	A cricket.
Tabok	A window.
Tabak	To stab.
Tagar	Rust.
Tajow	A jar.
Takat	A coral reef.
Tambok	A cooking place.
Tambing	The river bank.
Tambuku Bamban	Buttons.
Taming	A shield.
Tampeling	A slap in the face.
Tampik	To split wood, etc.
Tangan Tangan	The castor oil plant.
Tunghil	The Cicada.
Tapuk	To hide.
Tara Tara	A sea gull.
Tarok	The colour magenta.
Têbaro	Bamboo grass.
Tekuyong	A shell.
Tepi	Pearl shell.
Teranang	A water bottle.
Timbăran	A tree of the bread-fruit kind, the bark of which is used to make rope called Pelian.
Tislear	To make the mouth water.
Tengkalak	The block fixed on the top of the tripod bamboo mast of a boat.
Trepas	The small green love bird.
Tumpong	A bamboo used for carrying water.

Tumpuk . .	Heaps, groups, tufts.
Tunduk . .	The scalp lock.
Tundun . .	The back of the neck.
Tunkus . .	Grave-clothes.
Turuk Turuk . .	A silver heart-shaped ornament for a little girl.
Yubengkong. . .	The hammer-headed shark.



R. Hanitsch Phot.

Kadamaian River, Kina Balu, British North Borneo, 2000'

(LOOKING DOWN).

An Expedition to Mount Kina Balu, British North Borneo.

By R. Hanitsch, Ph.D.

(With four plates.)

Introductory remarks: The first part of this paper, containing the narrative of the expedition to Kina Balu, is based upon diary notes written during the journey and is practically the report which I sent in to the Committee of the Raffles Museum on April 27th of last year. The second part, containing the scientific results, could only be compiled after considerable delay; most of the zoological specimens obtained during the expedition had to be sent for identification to specialists at home and elsewhere, viz., Messrs. G. A. Boulenger, Edgar Smith, L. de Nicéville, R. Shelford, D. Sharp and L. A. Borradaile, and I take this opportunity of thanking them for their assistance. Two papers by Mr. Boulenger, the one containing the description of a new Freshwater Fish (A. M. N. H., Ser. 7, Vol. IV., pp. 228-229) and the other that of three new Reptiles and a new Batrachian (ibid. pp. 451-454), and a paper by Mr. Borradaile on Freshwater Crustacea, one of which is new (P. Z. S., 1900, part I, 2 pp.) are reprinted.

The Government of this Colony had kindly furnished me with credentials to the British North Borneo Government, and my thanks are due to the officials there, chiefly Mr. R. M. Little, Resident of Labuan, and Mr. H. S. Haynes, Magistrate, Province Keppel, who made all arrangements for carriers and who otherwise assisted me in every possible way.

Narrative.

The Mount of Kina Balu, British North Borneo, was first ascended in the year 1851 by Hugh Low (6), and since then by Spenser St. John (8) in 1858, F. W. Burbidge (4) in 1877, R. M. Little (5) in 1887, John Whitehead (10) in 1887 and 1888, and

G. D. Haviland (9) in 1892. The idea of attempting the ascent myself occurred to me in January last (*i. e.* 1899) when I made the acquaintance of Mr. H. T. Burls, M. I. M. E., F. G. S., who was passing through Singapore on his way to North Borneo in order to prospect there for oil, and who wished to ascend Kina Balu apart from his primary business object. After some discussion on the subject in Singapore, we settled the preliminary arrangements for a joint expedition by correspondence after Mr. Burls had arrived in Labuan. H. E. Governor Beaufort, British North Borneo, expressed his willingness to join the expedition.

I left Singapore by the S. S. 'Ranee' on *Saturday, March 4th, 1899* accompanied by my assistant P. M. de Fontaine and two native servants, a Chinese cook and a Malay, and reached Labuan, after an unfavourable passage, on *Thursday, March 9th.* Mr. R. M. Little kindly met me on landing and explained to me the various preparations for transport and carriers which were being made by Mr. Haynes at Gaya. Unfortunately I heard at the same time that Mr. Burls and H. E. Governor Beaufort were prevented from joining the expedition, the former through an accident to his knee, the latter in consequence of his accelerated departure for Europe. However, Mr. Burls kindly offered to take me on a short trip to Brunei the next day, and we slept the night on board his steam launch "Marudu" in order to make an early start for Brunei.

Friday, March 10th. We left about 3.30. a.m. for Brunei, arriving there at 9. a.m., explored the neighbourhood a little, visited a pawnshop where I bought a number of parangs and krisses for the Raffles Museum, and left again in the afternoon. We arrived in Labuan at 8 p.m. and slept on board the 'Marudu.'

Saturday, March 11th. Mr. Burls being unable to accompany me, I chartered the steam-launch 'Enterprise,' started from Labuan at 8.45 a.m., and had a pleasant run to Gaya, where I arrived at 7 p.m. We landed at the pier which is in process of being broken up. Since Mat Salleh destroyed the greater part of this village, including the Government offices, in 1897, the latter have been shifted to Gantian, on the mainland of Borneo, and the woodwork of this pier is now required for Gantian. In the darkness we climbed along the remains of the pier (at least $\frac{1}{4}$ mile long), and, when near the other end, were rescued by a native boat. Soon after, we met Mr. Haynes. As Mr. Little in his letter of instructions to Mr. Haynes had recommended that we should take the Tuaran route to Kina Balu, he very kindly promised to accompany me the next day as far as Panjut, a village on the mainland where our luggage carriers were awaiting us. I slept on board the 'Enterprise.'

Sunday, March 12th. We left the 'Enterprise' at sunrise and noticed crowds of the long-spined Sea-Urchin *Diadema setosum* in the shallow water below the pier, mostly sticking on to pieces of rotten timber lying at the bottom. From a fisherman we obtained a large number of the huge worm *Sipunculus robustus* which he was digging from the sandy shore for bait. At 8.30 a.m. we left Gaya in two rowing boats manned by Bajous, and had a most pleasant journey. When nearing Gantian, we passed through shallow water with beautiful corals and numbers of the striking red and black starfish *Oreaster nodosus.* At Gantian, usually known as Kabaggu by the natives, we met Mr. C. H. Keasberry, Sub-Treasurer and Postmaster. Then proceeding, we entered the Menkabong river at 1 p.m., passed the village of Mumpelum at 2 p.m., and soon after reached Berunggis where we landed. Here, without waiting for the second boat in De Fontaine's charge, which had dropped somewhat behind, Mr. Haynes and myself, with a few of the men, walked on to Panjut, about 2½ miles distant, passing through swampy fields with exceedingly poor padi—I hear by the way that this year's padi crop has been a failure throughout North Borneo—and reached Panjut at 3.15 p.m. We settled down in a spacious Dusun house, with a splendid verandah, ornamented with about twenty head-trophies, and caused the drums to be beaten, which signal was to call the men to fetch our luggage from Berunggis. After about 1½ hours' waiting, six Dusuns appeared with sledges drawn by water-buffaloes and started off towards our boats. At 6 p. m., as there were no signs of the luggage, I went back to Berunggis to hurry the men on and found that the second and larger boat had been obliged to stop lower down the river, as the tide had gone out, and that only a part of the luggage could be removed that evening. We returned towards Panjut, and feeling somewhat fatigued I mounted a water-buffalo, but as it floundered into a hole, I was promptly thrown off.

The harness was broken and the luggage upset, but otherwise no harm was done, and I mounted another buffalo, this time behind a Dusun driver; our progress was now safe, but the odour arising from my driver necessitated my holding my nose at a laterally elevated angle of 45°.

Monday, March 13th. We signalled for more men to fetch the rest of our luggage, but, after long waiting, only two men appeared. We followed them towards Berunggis and found a large fair in progress where the Dusuns from the interior were selling and exchanging their jungle produce with the Bajous, from the coast for fish, etc. Here Mr. Haynes introduced me to Malagup, a Dusun chief, who was to accompany me to Kina Balu, in charge of the coolies. Not catching the man's name I asked him directly for it, but was told by Mr. Haynes that the natives, and especially the chiefs, feel offended at being asked for their names directly; one is supposed to know them and in any case must find them out from a third person. Most of the Dusuns had come to the fair on their buffaloes, so that we now found no difficulty in getting sufficient conveyances for our luggage. Mr. Haynes here left me to return to Gantian, and I went back to Panjut, arriving there about 11 a.m. The coolies in the meantime had begun to gather, but appeared most indolent; they tried package after package, but finding them all too heavy, dropped them again in disgust. The situation seemed hopeless; even Malagup had vanished, and in the burning midday sun I had to go to his house, two or three miles distant, to look for him. I rode back on a buffalo to Panjut, but now our patience with the carriers was exhausted. The men had apparently only been awaiting for some forcible language, and at last took up the luggage. We made a start at 2.30 p.m., and after about 10 minutes' walk from Panjut we reached the broad and rapid Tuaran river. Only a single small boat, a dug-out, was available, and it took more than an hour to ferry us all across. Here we met a jovial old Chinaman who invited us to spend the first night in his house, in the village of Bandeian, not quite 2 miles higher up on the right bank of the Tuaran. This we accepted. The first day's march was thus only short, but I was glad to have made a start, and to have got the coolies away from their homes. They camped on a nice grassy ground between the house and the river, whilst I, with my men from Singapore, slept inside.

Tuesday, March 14th. We left the Chinaman's house at about 7 a.m., walking through an open cultivated plain, passing many buffaloes grazing there who were apparently on the best of terms with flocks of snow-white herons who stalked about between them, or stood on their broad backs. We reached Menkaladai at 8 a. m., and soon after arrived at the foot of a long chain of hills. The ascent was steep and slippery, sometimes passing through old jungle, more often through high bamboo, lalang and fern. We rested on the top of the hill, and refreshed ourselves with delicious water from the branches of a creeper, called Pokok Gunatol by the natives, which the men cut off with their parangs, for every man was thus armed, some also carrying spears in addition. We marched on, and reached Kappa at 1.30 p.m. This is a miserable village of four or five houses in the midst of the jungle, with no attempt at a clearing, but plenty of filth and pigs about. We settled down in a house adorned with ancient skulls of deer and wild boar.

Wednesday, March 15th. We left Kappa at 8 a.m., and walked along mountain ridges through bamboo, fern, and deep grass, or occasional forest. Drizzling rain set in soon and lasted for some hours. In the afternoon we passed through several clearings indicating the vicinity of a village, and reached Kalawat at 4 p.m., though some of the men only turned up at 6 p.m. This was a small but picturesque village, looking like an oasis in the wilderness around: an open grassy space with granite boulders lying about, and clumps of coco-nut palms shading the houses. The houses, however, were few, about five, and small, and their unpromising interiors together with the fineness of the night induced us to pitch our tent and camp outside. Many of the men did likewise. Malagup showed himself useful by buying for us a fowl and a joint of bamboo full of honey for seven cents.

Thursday, March 16th. About 2 a.m. I was awakened by a heavy thunderstorm. I felt safe and comfortable in my tent (lent by the P. W. D., Singapore), till suddenly a little rain came trickling through my blanket, and I roused myself to find that it was pouring into the tent which was supposed to be waterproof.

To leave the tent and take refuge in the houses seemed impossible; it was pitch dark and the weather outside too awful. So I remained soaking till 6 a.m. when I fled to the next house. This experience cost us dear, since many of our things got wet through and remained so for several days. We left Kalawat in disgust at 9.50 a.m., fine rain falling at the time, but fortunately the sun came out soon after. Our path now descended, and we had an easy march to the Inuman River, arriving there about noon. This is a splendid river, rushing along over boulders and shaded by mighty trees. Here we bathed and the men caught me some remarkable tadpoles with huge suckers (*Rana cavitympanum*). They always found these tadpoles attached to the boulders in the most foaming parts of the river. We crossed by a ford to the left bank, and then over a low watershed and reached the Menternan River. This river we had to ford three times in close succession: the natives apparently making a speciality of short cuts: in this case it seemed to me it would have been much easier to ford the river once and then proceed along the bank, but my guides had different ideas. At 2.45 p.m. we reached Bungol, a large village on the left bank of the Menternan. Here the men begged me for a treat to buy them a bull. As this somewhat startling proposal only involved an expenditure of $3, and it was a splendid young beast, I agreed, and much admired the speed with which the animal was despatched and disappeared in the various cooking pots. I myself had an excellent steak before me about an hour after the bargain had been concluded. Heavy rain fell during the late evening.

Friday, March 17th. The day opened somewhat foggy, but fine, and we started at 7.45 a.m., fording the Menternan three times, and ascending Gunong Kampil by a slow incline. Then followed a tremendously steep descent, about 2000′ down a grass-covered slope, to the Kadamaian river, which is the local name for the upper course of the Tampassuk. The river here is already deep and difficult to ford on account of its strong current. The men were up to their necks in water, and had to carry the luggage on their heads. Fortunately everything remained dry, with the exception of my camera. We rested on the right bank of the river, and reached Koung at 2.15 p.m., having had fine weather during the march, though rain set in soon after. I heard that the rice coolies were awaiting us in this village. They had left Panjut on March 5th with instructions to proceed to Kiou, but, being afraid of the people of Kiou, they had stopped here.

Saturday, March 18th. We left Koung at 7.40 a.m. and proceeded along the right bank of the Tampassuk, climbing over many cliffs and boulders along the edge of the river. Then we forded the deep and rapid river Lobang near its junction with the Tampassuk, passed through some swampy undulating ground covered with grass, fern and bushwood, forded the small and winding Kiulan river several times, ascended a high and steep hill, and reached Kiou at 12.30 p.m. Kiou is a village of considerable size, the largest we had met so far during our march, scattered over an extensive grassy clearing on an enormous slope, with many clusters of coco-nut palms in the vicinity of the houses. I heard that I was the first European who had visited Kiou for four or five years, but it is apparently more than that, as two men showed me certificates from Dr. G. D. Haviland, dated April 24th, 1892, which stated that the bearers had acted as his guides during his ascent of Kina Balu in March 1892. Dr. Haviland, called 'Tuan Bunga' by the natives, seems to have been the last European here, and before him Mr. John Whitehead in 1887, who is remembered as 'Tuan Burong.' Malagup, the Dusun Chief, here came to me soon after our arrival, saying:

M. 'Tabek, Tuan, itu orang coolie mau satu ayam.'

R. H. "Apa? Itu orang coolie samoa samoa mau satu ayam?"

M. 'Tabek, Tuan, satu ayam besar.'

R. H. "Satu ayam besar? Apa macham ayam besar?"

M. 'Tabek, Tuan, satu kerbau.'

The men had apparently enjoyed the bullock I had given them two days before, but I am afraid my answer to Malagup did not encourage similar requests. Still the men seemed to be bent on pleasure, for they asked me for a holiday the next day, which happened to be a Sunday. To this I agreed. In the morning the weather had been dry, except for a few minutes of drizzling rain. But we had rain all afternoon till late into the night. Aneroid at 3.45 p.m. 2400'; thermometer 76° F.

Sunday, March 19th. I ascended with De Fontaine to the top of Kiou hill which is covered with deep jungle and is about 1000′ above the village. From a clearing we had a wonderful view of Kina Balu; nothing intervened between here and the foot of the mountain which seemed scarcely more than three miles off, and the top of the mountain, bare and rocky, stood out chiselled clear and sharp against the sky. Our success in collecting was small, but the men brought in a good deal, especially stag-horn beetles and several species of coconut beetles. *Megalophrys nasuta*, the strange frog with the large projecting triangular eye-lids and triangular flap to its nose, seemed to be common here, as we found it the day before in Koung. I interviewed the guides; the one informed me he could only start with us in two days, as he had to get a fowl and seven eggs for sacrifice to the spirits of the mountain. Arguing with him led to no results. The other guide, however, declared that he would be ready on the next morning.

Monday, March 20th. We rose early to make a start for Kina Balu, but the coolies, who had scattered over the whole village, were slow in assembling. I interviewed Malagup at 8 a.m. and tried to expedite matters, but at 10 a.m., as sufficient men had not appeared, I decided to leave some of my luggage behind and start. But we had still to wait for the guide who finally turned up after urgent messages. He now refused to go without his colleague, the fowl and the seven eggs. So at 10.45 a.m., with blessings on the guides, the fowl and the seven eggs, I decided to abandon the start. Things seemed utterly hopeless.—Morning sunny, afternoon dreadfully rainy and dreary.

Tuesday, March 21st. Dull morning, rain until daybreak. The men really turned up soon after 6.30 a.m., but a start was not made until 7.30 a.m. After a steep descent we reached an isolated group of houses, which the natives still called Kiou, at 8 a.m., aneroid 1800′, then continued the descent to the Kadamaian River which we reached at 8.25 a.m., aneroid 1500′, crossed twice by bamboo bridges and twice by fords, passed a little village in the midst of an extensive plantation of Keladi and a little maize, had to cross by a formidable ford just below the place where the river forms a small island, and from there our way lay almost exclusively inside the bed of the river which consisted of a never-ending series of foaming cataracts rushing over boulders of granite, and we had to force our way through the one and climb over the other. The men seemed disheartened, and the guides recommended waiting a day for the water to go down. This seemed an empty excuse at the time, but a little experience showed us later on how very variable the height of the water is in these mountainous regions. We still plodded on, and after many difficulties and some mishaps—one of which was the breaking of the ground glass of my camera—we reached at 1 p.m., a spot on the bank of the river sheltered by a huge slanting rock. Here we camped. Aneroid 2150.′

Wednesday, March 22nd. I slept little during the night, being kept awake by the comparative cold (about 65° F.) and the roaring of the river. Aneroid, 6.30 a.m: 2050′. We started at 8.25 a.m., proceeding again chiefly in the bed of the Kadamaian. The cataracts and boulders were, if anything, worse than the day before. My sturdy Chinese cookie got washed away by the torrent, but was rescued by the men. After some hours we finally left the river, and began a steep ascent, first along a little brook which came dancing down over precipices, then along an ordinary steep jungle path. Mosquitoes, which during the whole journey, even in the native houses, had been scarcely noticeable, began, from about 3500′, to be very troublesome whenever one was still. At 2.45 p.m., we reached a huge ledge of rock similar to the one under which we had camped the previous day. Here we stopped. When changing, as I always did on reaching camp, I found a leach on my leg, the only one during the whole expedition, although I took no special precautions against them. Aneroid 4140′. Sunny morning, foggy late in the afternoon, and a little rain.

Thursday, March 23rd. Another cold night, during which, as in fact during the whole expedition, I enjoyed little sleep, feeling the cold chiefly in my joints, notwithstanding plenty of warm clothing and blankets. The morning opened dismal, with drizzling rain. The guides informed me that it would now take two more days to reach the cave (about 9500′), and as at that rate probably two additional days would be required to reach the summit (13,698′), and probably as much time again to descend to where we were, say eight days in all, without any time for collecting, and as of the first half of the time allowed for the expedition only two days were left, I decided to proceed no further, but to begin to collect on the spot. I was also influenced by the guides' statement that the next climb would be stiffer than before and would have to be done without shoes, and that most of the men and the bulk of the luggage would have to be left behind. That these statements were no exaggerations, I knew from the accounts of former travellers. It was a severe disappointment to give up the idea of reaching the top, but I saw that a hurried climb with all sorts of discomfort would bring little practical result, and that the aim of the expedition would be served better by collecting now on the lower ranges of the mountain. I therefore made the men go out collecting, and as I promised them little rewards, I was kept busy all morning receiving and bottling specimens. Dismal rainy afternoon, during which I amused myself (and still more the natives) by compiling a little Dusun vocabulary, chiefly with Malagup's help. Temperature at 5 p.m. 66°. Glorious sunset. Fine moon during the night which, however, did not favour sleep, and though the slanting rock protected us against rain, it was of no use against the moonlight.

Friday, March 24th. The temperature between 5 p.m. on the previous evening and 7 a.m. varied between 60° and 64° F. Aneroid 4210′. I went out collecting with my men in the vicinity of the camp. The ground was exceedingly steep, and there was a great deal of loose rock about: I had constantly to warn the men to collect at the same level, not below and above each other; the rocks were continually crashing down into the valley like miniature avalanches. Mosquitoes were again very troublesome in parts of this jungle. The men brought in small Mammals (shrews, squirrels, rats), trapped during the night, and also a good many Reptiles, Amphibians and Insects. A welcome surprise: the guides, who were now convinced that I should not attempt to ascend to the summit, presented me with the fowl which had been intended for the spirits of the mountain. Apparently we did not require any spiritual protection in these lower ranges The natives evidently did not mean to swindle the gods, as the fowl was most excellent and tender. Maximum

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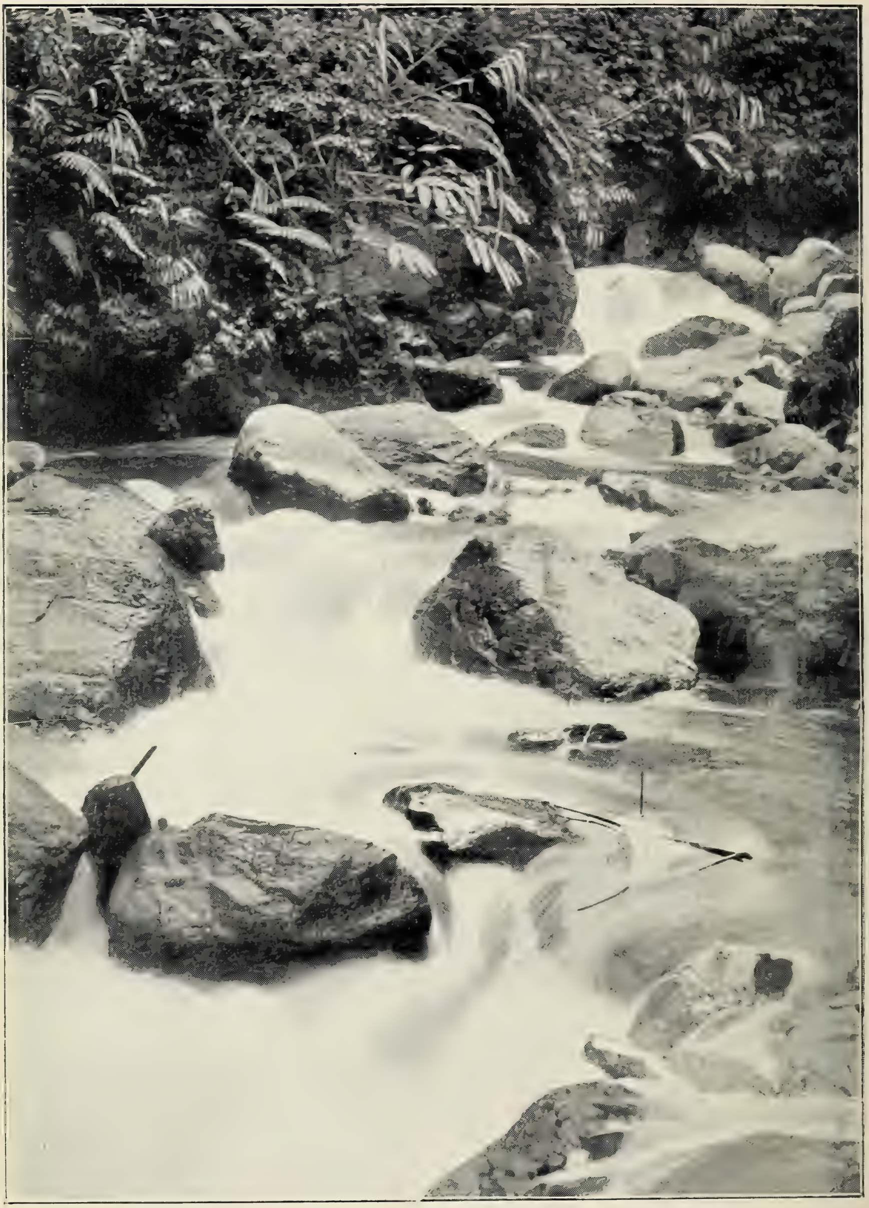

R. Hanitsch, Phot.

Kadamaian River, Kina Balu, British North Borneo, 2000′

(LOOKING UP.)

temperature during the day: 67°, down to 65° at 5.45 p.m.; fine, but foggy, in the morning; the usual rain in the afternoon.

Saturday, March 25th. Temperature during the night 60·5°-63°. Nice clear morning. Many frogs were brought in by the natives. We packed, and began our descent and our way home at 9.45 a.m., as now the first half of my leave had expired (*i. e.* three of the six weeks.) We reached the Kadamaian at 11.45 a.m., and our old camp, under the ledge of rock, at 1.25 p.m., where I decided to stay a day to collect. The descent to the river was steep and difficult, but this time the river itself offered no dangers and difficulties comparable with those of a few days before, as the water had gone down. Weather fine until 3 p.m., when the usual rain set in.

Sunday (Palm Sunday), March 26th. Although the temperature at night time here was only very little higher than in the upper camp (63°-65°, as against 60°-64°), we found the change very noticeable and most agreeable. I mended my camera by substituting a piece of oiled paper for the ground glass broken some days before, and took a few views of camp and river. Then we went collecting, the men bringing in a good deal.

Monday, March 27th. Lowest temperature during the night 64°; at 6.30 a.m. 65°. I took some more photographs, and we started for Kiou at 9.30 a.m., the progress through the river being very easy. We reached the open field at 9.50 a.m., and Kiou at 12.30 p.m. [Two of the photographs are here reproduced, both taken from the same point, but one looking up, the other down, the Kadamaian River. Within the bed of this river our route lay for a considerable distance up and down Kina Balu. But on the day when these photographs were taken, the water was considerably lower than on March 21st and 22nd when we went up the mountain.]

Tuesday, March 28th. Early in the morning I went with De Fontaine to the top of Kiou hill to take some photos of Kina Balu, but found it hazy and the sun standing just above the mountain. We waited for matters to improve, and climbed about in search of a favourable spot, finding the heat of the morning scarcely bearable. Finally we took a few views, and returned to Kiou, hot and tired. Then after calling the coolies together, we left the village at 10.30 a.m., went down a steep descent, proceeded along our former path, and got a view of the picturesque village of Lobang, perched on a hill in front of us, and, like most of the villages here, fringed round with coco-nut palms. We passed below the village, and reached the river Lobang at 11.45 a.m. We had to ford it as before, and most of the men as usual took the opportunity of having a proper bath, but, for the first time during the expedition, I felt myself disinclined for the exertion. Rain set in soon after, and we reached Koung at 1.55 p.m. I developed a strange dry cough in the evening, which, however, disappeared during the night.

Wednesday, March 29th. I had the usual trouble with the coolies before they took up their luggage. Some were scattered over the village, and with Malagup I had to go to a house on the hill to fetch the last stragglers. Whilst the men were still packing, I left Koung by myself at 8.45 a.m., wishing to proceed slowly and intending to await the others at the ford of the Tampassuk which I thought I remembered. But after half an hour's walk, I found that I had lost my way, and endeavoured to return, passing through jungle and wet grass, breast high. At last I heard the shouts of the men, and reached the ford just as the last of them were crossing. I felt pretty well exhausted, but undressed and went through the rapid river, requiring all my energy to keep my balance. When dressing again I had great difficulty in putting on my clothes which were damp with perspiration and with wading through brooks and tall grass during the last hour. I called out for help and then almost immediately collapsed in a faint, though retaining consciousness. I felt as if I had arrived at a very literal 'dead stop,' lying groaning between the boulders on the bank of the river and suffering much from cramp in my limbs. When able to speak again, I got the men to make me a bed of leaves and light a fire, and then to prepare for me a strong soup. After taking this I felt better, and when half-an-hour or so had passed, was able to get up again. A message was sent to the men in front of us to stop. De Fontaine as usual proved most helpful and equal to emergencies, as he had been throughout the whole expedition. All this happened on the left bank of the Tampassuk which, consisting chiefly of sand and boulders, was only a few yards broad and rose at once into the extremely steep Gunong

Kampil, about 2000′ high. Being covered with grass only, this hill was exposed to the full glare of the sun. However, I decided to push on to our next stopping place, Bungol, rather than return to Koung, but progress was exceedingly slow, as after every twenty yards or so of climbing I had to rest. After an hour's time I took a tin of Brand's Essence of Beef, and in another hour a cocktail, and, with the help of a man in front of me, who pulled me up with his stick, I progressed better. The men were most patient aud stopped every time with me. At about 2 o'clock the sky darkened, affording at least some protection against the burning sun, and finally the usual thunderstorm broke forth, but with abnormal violence. Still climbing and quite drenched, we reached a little broken-down shed where some of the men, with most of my private luggage and the tent, were awaiting me. Most of the party, however, including Malagup, had gone on to Bungol. Here I partook of more refreshment, and feeling very much better by this and probably also by the cooling rain, I, after a little rest, astonished and amused my men by shouting out 'lakas, lakas' when they were taking up their things at 4.15 p.m. The ascent continued, so did the pouring rain, and finally, near the top of the mountain, we entered thick jungle. Lightning and thunderclaps were now frequent, and were greeted with yells by the men. Now began a slow descent along a clayey and deeply worn jungle path which in many places was transformed into a yellow stream. About 6 p.m. the rain ceased, and we approached the River Menternan with many misgivings. I knew it had to be forded before reaching Bungol, and when we arrived on the bank at 6.15 p.m., I was not surprised to find it a roaring yellow torrent, impossible to cross. But we had some hope, as from the marks along the bank we saw that it was going down rapidly after the heavy thunderstorm. So we decided to wait a little, I trying to keep myself warm by walking about. It got dark now and I lit the stump of a candle which I found in my portmanteau, and the men made long, but fruitless efforts to light a fire. Two or three of our most plucky men were daring enough to cross the river in order to go to Bungol for help and a lamp, but they did not return. Waiting and shivering with cold, we stood about till 8. p.m., when I decided to stay where I was and fix up my tent. I put on dry clothes, wrapped myself in blankets and felt warm and comfortable, although getting only little sleep. But as the river by this time had gone down considerably, De Fontaine and some of the men managed to cross and reached Bungol in safety. Only a few Dusuns stayed with me, making as usual next to no effort to prepare a sleeping place for themselves, but remaining squatted on the wet ground, some perhaps with a few sticks between it and themselves, but in no case with protection above. My camp-bed broke down partly during the night.

Thursday, March 30th. I got up at 6 a.m. and found that there had actually been no rain during the night. Some of the men had already returned from Bungol to help us across the Menternan, so we left at 6.30 a.m., and as I still wore my dry and warm flannels from the previous evening, I had myself carried across the river, which we had to ford three times, and reached Bungol at 7.45 a.m. I felt the need of a day's rest, and decided to remain here, but gave directions to Malagup to proceed with the coolies carrying the luggage which was not immediately required, to Panjut, our starting place on the coast. I gave him instructions to reach there on the Saturday following, and to discharge the coolies on arrival, giving him also a letter for the district officer there to the same effect. I spent the day resting and taking notes. Dull day, drizzling rain from about 1 p.m., heavy rain from 3 p.m.

Friday (Good Friday), March 31st. I had a comfortable night, although only little sleep. We left Bungol at 8.3 a.m., forded the Menternan and Inuman Rivers, climbed the Gunong Kalawat, and reached Kalawat at 1.55 p.m., in fog and rain. It was a heavy day's work, ascending nearly all the time, added to which was the recollection of our march over the same ground two weeks ago, when we had found the down-hill way so easy. This time we did not attempt to camp out in this village, and I managed to get a tiny, but comfortable room all to myself.

Saturday, April 1st. We left Kalawat at 7.30 a.m., caught sight of the sea for the first time again at 9.40, and were overjoyed, like Xenophon and his companions. When approaching Kappa, about 2 p.m., one of the men who had been in advance came running back to say that a 'Tuan' had arrived in the village and wished to see me. It was Mr. Burls on his way to wards Kina Balu. He told me that he had left Labuan on March 16th, and, on account of trouble with the carriers, had been detained on his way. The old Chinaman whose hospitality we had enjoyed some weeks ago in Bandaian, had turned up in Kappa before my arrival, and had informed Mr. Burls that gold was to be found one hour's walk from here. So Mr. Burls sent for the Dusun who was supposed to know the spot, and, on my advice, asked the man to fetch him a piece of the precious metal. The man promised to do so next morning at daybreak.

Sunday (Easter), April 2nd. At 7.30 a.m. Mr. Burls heard that the Dusun had not started as yet for the gold, but would do so after his breakfast. This was at last over, but then the Chinaman came to say that the locality was unsafe on account of an enormous snake. The Chinaman's arms were just long enough to give us an idea of this snake's diameter. We tried to allay those fears, but were then told that the gold was down a deep hole, that candles were required, and that at least three men would have to go. To my regret I had to leave Kappa in the midst of this interesting discussion, starting at 8.40 a.m. It was a nice morning, after pouring with rain all night until 6 a.m. We began the descent at 10.15 a.m., reached the plain at 10.50, the village of Menkaladai at 11.30, rested a little, and reached the Tuaran River at 2.20 p.m., one of the men taking us through a most swampy 'short cut,' between padi fields. Here we had to wait a little while for a boat, and I reached Panjut somewhat in advance of the others at 3 p.m., with feelings of profound relief. Being transplanted comparatively suddenly from the hilly interior to Panjut, in the plain and near the sea, the people here struck one at once as more comfortable and better off: they had more buffaloes, many goats, and sledges, which indeed would have been impossible inland, and better clothing, and were also oftener intoxicated, a sure sign of civilization. But there were also more flies and ants in the houses, and more mosquitoes at night time, which, however, were not very troublesome. We heard that on the day before there had been a large funeral here, on which occasion five buffaloes were killed.

Monday, April 3rd. As I was absolutely in the dark as to when and where, whether in Gaya or in Labuan, we should be able to catch a steamer to take us to Singapore, I sent De Fontaine to Gantian to make enquiries. I spent the day taking notes, the coolies and crowds of villagers as usual standing and squatting round me, and watching every movement, nearly distracting me by their continuous coughing. But I found some music going on in a neighbouring house very soothing.

Tuesday, April 4th. De Fontaine came back at 7 a.m., after having travelled part of the night, bringing the dismal news that a coasting steamer had left Gaya for Labuan at midnight. This really made no difference in the end, however, as we heard later on that this boat had no connection in Labuan with boats for Singapore. He had brought with him a large rowing boat, and so I decided to leave at once for Gantian. We started from Panjut at 8.30 a.m., reached Berunggis at 9.15, left there by boat at 9.30, and reached the district office of Menkabong, at the mouth of the Menkabong river, at 12.30. Here we had a rudimentary tiffin, left again at 2 p.m., and, rowing and sailing, reached Gantian at 4.53. p.m. It was a very trying journey: the day was hot and cloudless, and we sat in an open boat cramped between piles of luggage. To my regret, I found Mr. Haynes, who in the meantime had shifted from Gaya to Gantian, down with liver, but Mr. Keasberry kindly took charge of us and put us up in an unfinished wooden house intended for the native clerk. The carpenters with their boards and wood shavings lying about were cleared out in a few mintues, and we established ourselves there in a rough and ready fashion.

Wednesday, April 5th. No work done, all feeling the need of a day's rest. I saw some newspapers, for the first time for about a month.

Thursday, April 6th. I hired a native boat and went out at 6.30 a.m. to the reefs where I did some collecting, chiefly corals, a native diving for them, and spent the greater part of the day in cleaning and bleaching the corals. A coasting steamer brought the welcome news from Mr. Little, Labuan, that two gentlemen, Messrs Lower and Pavitt, would arrive in Gaya on Sunday next with the steam-launch 'Sri Putri,' and could take me down to Labuan just in time to catch the 'Hecuba' for Singapore. De Fontaine was ill this day.

Friday, April 7th. I collected more corals, and De Fontaine went out shooting birds and squirrels. There were strange rumours about: trouble was expected with the natives in the neighbourhood, and rough defences, consisting of breast-high boarding with sand between and plenty of barbed wire outside, were erected around the offices. We noticed several little colonies of natives settling down on the shore of the bay just to the north of Gantian, having left their homes out of fear.

Saturday, April 8th. We spent the day in packing and preparing for our return to Singapore.

Sunday, April 9th. Messrs Tower and Pavitt arrived here at 8.45 a.m., and informed me of the arrival of their steam-launch in Gaya. I reached Gaya at 12.15 p.m., and we all left for Labuan at 4.40 p.m.

Monday, April 10th. We anchored during the night off Pulo Tiga, reached Labuan at 10.53 a.m. and put our luggage on board the 'Hecuba'. I went to see Mr. Little, made two or three calls and returned to the 'Hecuba' which was to sail at 4 p.m. On my way down to the boat I found the place in great excitement as Governor Beaufort was leaving by her for Singapore, bound for Europe. The natives expressed their farewell good wishes by firing off crackers, and by music and processions. Also a large party of Europeans came on board to see H. E. off. The boat left at 5.15. p.m.

Tuesday, April 11th—Thursday, April 13th. At sea. Pleasant passage.

Friday, April 14th. We anchored off Singapore soon after midnight, and landed at Johnston's Pier at 7.15 a.m.

General Remarks.

Barter and *Coinage.* When preparing for my expedition I was in doubt as to whether I should take with me a supply of barter, as Spenser St. John, Whitehead, and others had done, but was afterwards glad that I had abandoned the idea. The things I would have taken would certainly have been almost useless. What we were asked for in every village to and from Kina Balu was kerosine oil, and the natives always annoyed us by bringing large vessels in the hope of sharing our little supply. Next in demand were soap and matches. Only once in Kiou were we asked for cloth and red beads. Thus, with the exception of the last, it is the necessaries of life which would seem to be required, not trifles, though the red beads, as universally worn by the women, may almost also be regarded as necessaries. Instead of barter I had supplied myself with plenty of small silver, but was highly astonished to find these coins were almost unknown; even Malagup, the Dusun chief, living in a comparatively rich district on the coast close to where a large fair is held once or twice a week, did not know the value of a 5-cent piece. These coins were always accepted with distrust, except by a young man in Bungol who had a collection of them. But he had lived in Kudat for some time and spoke Malay fluently. On the other hand, notes (B. N. Borneo has notes down to the value of $1, 50 cents, and 25 cents), silver dollars, and copper cents were always acceptable, copper being apparently the chief currency, though the natives were glad when they could exchange their copper savings for silver dollars with us. In great demand also were the empty provisions tins, especially those with lids, and it was amusing to see the scramble when one threw an empty condensed milk tin away.

On the March. We generally started at 8 a.m. and reached the next stopping place about 2 p.m., the villages being at convenient distances from each other. The weather as a rule was fine in the morning, but rain set in nearly always in the early afternoon, so that we seldom reached camp without getting wet. However, this made little difference, as we were often soaking wet from fording the rivers. Naturally we always changed on reaching camp and made an attempt to dry our things, but they were generally still wet on the next morning, and when setting out on our march we always put on the wet things from the day before, feeling only little discomfort. There is a narrow path from Panjut right up to Kiou, just wide enough for one man, but broadening out in the neighbourhood of the villages, and of course branching off here and there. It runs for a considerable distance along the top of the mountain ridges, rather provokingly following every one of their curves, but having the advantage of a free outlook for ascertaining one's whereabouts. Paths along the rivers on this route were exceedingly rare, thus differing essentially from the Tampassuk route to Kina Balu. After Kiou the path continued in the usual way, became somewhat indistinct after we had left the Kadamaian River, but was more noticeable here and there from old camping places and traps for birds and smaller game set at intervals.

Life amongst the Natives. We found the Dusuns very good-natured and harmless people, and quite honest until the last day in Panjut when our kerosine oil disappeared for a few hours and some other trifling things for ever. They were certainly somewhat lazy in the morning, and there was generally a great deal of grumbling before they took up their loads, but when once started, they left little to be desired, and showed themselves splendid carriers especially on hilly ground. Very annoying was their intense curiosity: when we arrived at a village, not only our carriers and the people of the house with their immediate friends, but all the village came and stood there, several rows deep, around us. We could not change our socks or any other part of our dress without themselves and their women and children taking stock of every movement and every article. It was the same when the cook prepared my meals or when I partook of the same, when I wrote my notes or bottled specimens, when I undressed at night-time and disappeared behind the mosquito-curtain, everything formed food for their admiration and amazement. Sometimes when I sat perfectly still without doing anything, their attention relaxed, but my slightest movement had the effect of the curtain rising at the Pantomine, the eyes and open mouths of all present were directed to one point. No box or portmanteau could be opened without every one rushing to see what it contained. When I awoke in the morning I was sure to find people squatting round my camp-bed who had apparently been anxiously waiting for signs of my awaking. The worst was that it was impossible to escape from it: as, once arrived at a village at about 2 o'clock in the afternoon, we changed, and as we nearly always had rain from that hour and the neighbourhood of the houses was a mass of filth, accumulated ever since the houses had been built, we did not care to go out and get wet and dirty again. The inside of the houses was at least dry and fairly clean, the floor, raised about five feet above the ground, being formed of split bamboo, in many cases covered by rattan matting, and in a few cases the owners of the houses brought me a special mat to sit upon. The space below the houses was generally inhabited by pigs, but though they grunted day and night, it did not interfere with our peace. Much more annoying was the continuous coughing of the people, many of them seeming to suffer from chronic colds. Taken altogether, the stay in the Dusun houses was far from pleasant, and on dull days exceedingly dreary, but, after our experience at Kalawat, it was preferable to camping in the open.

Food. As I mentioned before, the last padi crop was a failure in N. Borneo, but even in prosperous years it would probably be impossible to get sufficient rice from the different villages for a large body of carriers, and on this occasion people did not even like to sell a few cents' worth. In the district we visited communication is a matter of intense difficulty, everything has to be carried by man, the hilly parts are quite impassable for bullocks, and the rivers are torrents along which even the smallest crafts could not find a passage except for a few hundred yards at a time. However, in almost every village I was able to get fowls and eggs for my own consumption, the former ranging in price between 10 and 20 cents, sometimes even less, and eggs from 1 to 2 cents. But large parties would probably have been unable to get sufficient. Milk was unknown. Coco-nuts we got in every village free of charge, and they were always welcome. There was practically no house without a group of coco-nut and betel-nut palms close by. Two or three times we got Langsats, which seemed to grow half wild, especially near Koung. They were very refreshing, but unusually sticky.

Scientific Results.

MAMMALS.

From the list given below it will be noticed that no big game was obtained during the expedition. The largest mammal seen was a black long-tailed monkey, probably *Semnopithecus femoralis*, observed near Gantian. However, in the mountain jungle between Kappa and Kalawat, we passed several traps which we were told were intended for Tembadaus (*Bos sondaicus*).

These traps consisted of two rows of substantial upright poles rammed into the ground and converging at one end, the other end being open and continuous with the jungle path, so that the animal once entered would jam itself between the poles at the far end of the traps. Traps for small mammals, as figured by Burbidge (4), p. 87, and Whitehead (10), p. 167, were frequently seen on Kina Balu, and most of our mammals were obtained with them. The only mammal we saw in anything like numbers was the bat *Cynopterus lucasi* which made its appearance generally late in the afternoon at our upper camp, 4,200.′ The following is a complete list of the mammals obtained.

Cynopterus lucasi ♂ ♀ Kina Balu, 4,200′.
Scotophilus temminckii ♀ Kappa.
Tupaia ferruginea longipes ♂ Kina Balu, 4,000′.
Crocidura fuliginosa ♂ Kina Balu, 4,000′.
Gymnura (*Hylomys*) *suilla* ♀ Kina Balu, 2,100′.
Sciurus brookei ♂. Kina Balu, 4,000′.
——— *notatus* ♀. Gantian.
——— *prevostii* ♂. Gantian.
Mus mülleri ♀. Kina Balu, 4,000′.
——— *sabanus* ♂. Kina Balu, 2,000′.
——— *whiteheadi* ♀. Koung.
——— *ephippium* ♀. Bungol.
——— *rattus* ♂ ♀. Several specimens on the hills and in the low lands.

BIRDS.

Only three common birds were obtained in the lowland near Gantian:

Bubulcus coromandus ♀.
Nyctiornis amicta ♂ ♀.
Rhinortha chlorophæa ♀.

At Kiou, 2,400′, a female *Merula obscura*, since identified by Mr. A. L. Butler, was obtained.

REPTILES.

The chief prizes obtained during the expedition belong to this group, as of the 18 species collected three proved new to science, one of them representing a new genus, and two others new species. It is noteworthy that of only a very few species was more than one specimen obtained. The collection comprises:

CHELONIA:

Trionyx cartilagineus, Gunong Kalawat.

LACERTILIA:

Gymnodactylus marmoratus. Kina Balu, 4,200′. 8 specimens.
Hemidactylus frenatus. Near Tuaran River.
——— *platyurus.* B. N. B.
Gehyra mutilata. B. N. B.
Gecko rhacophorus, n. sp. Kina Balu, 2,100′.
Draco cornutus. Kiou.
Calotes cristatellus. B. N. B.
Japalura nigrilabris. Kina Balu, 4,200′. One ♂; two (♀).
Mabuia rudis. B. N. B.
——— *multifasciata.* B. N. B. 3 specimens.
Lygosoma variegatum. Kina Balu, 2,100′, and 4,200′. Many specimens.

OPHIDIA.

Stoliczkaia borneensis, n. sp. Kina Balu, 4,200′.
Tropidonotus conspicillatus. Near Tampassuk River.
——— *flavifrons.* Kina Balu, 2,100′.
——— *saravacensis.* Kina Balu, 2,100′.
Oreocalamus hanitschi, n. g. and n. sp. Kina Balu, 4,200′.
Lachesis gramineus. Kina Balu, 2,100′.

The description of the three new species as given by Mr. G. A. Boulenger, F.R.S., (3) pp. 451-453 is as follows:

Gecko rhacophorus.

"Head moderately large, once and one-third as long as broad; snout longer than the distance between the eye and the ear-opening, once and a half the diameter of the orbit; ear-opening round, its diameter one-third that of the eye. Body and limbs much depressed, bordered with dermal expansions; fingers and toes fully half-webbed. Head, body, and limbs covered with minute granules intermixed with small, round, smooth tubercles; rostral a little more than twice as broad as deep, without median cleft; nostril pierced between several small scales; nine upper and ten lower labials; symphysial small, pentagonal; a series of six small chin-shields; spine-like tubercles on the sides of the head, the largest above the ear. A moderately developed scalloped membrane on each side of the body, scaled like the body and fringed on the edge. Abdominal scales flat juxtaposed granules. An angular series of præanal pores. Tail depressed, scaled like the body, bordered with a series of rounded lobes. Greyish above, speckled with darker and with wavy dark transverse lines; brownish beneath throat with darker dots."

	Millim.
Total length	105
Head	18
Width of head	14
Body	47
Fore limb	21
Hind limb	28
Tail	40

"A single specimen from the Kadamaian River, Kina Balu, 2,100 feet."

"This species connects *Gecko* with *Ptychozoon* and stands in the same relation to the latter genus as *Hemidactylus platyurus* does to *Mimetozoon*. The lesser development of the parachute-like lateral membrane and the absence of differentiation in the lepidosis of that membrane, justify its allocation to the genus *Gecko* rather than *Ptychozoon*."

Stoliczkaia borneensis.

"Rostral moderately large, triangular, not visible from above; a pair of very narrow internasals; a pair of large præfrontals, separated from the frontal and supraoculars by a series of small scales; frontal a little broader than long, a little shorter than the parietals; supraocular very small; eye very prominent, with vertically subelliptic pupil, surrounded by the supraocular, two or three prœoculars, the fifth labial, and seven or eight small scales; nostril very large; loreal much longer than deep;

ten upper labials, the two last longest; temporals small, scale-like; a single pair of small chin-shields, in contact with three lower labials. Scales in 30 rows, those on the vertebral region and those adjacent to the ventral shields largest, elongate rhomboidal, juxtaposed, the others very small and separated by naked skin. Ventrals 210; anal entire; subcaudals 124. Rufous, with large blackish spots, at least as large as the space between them, disposed more or less regularly in three longitudinal series; brown beneath, the shields edged with yellowish."

"Total length 750 millim.; tail 240."

"A single female specimen from Mount Kina Balu, 4,200 feet."

Oreocalamus, gen. nov.

"Agrees in every respect with *Macrocalamus*, Gthr., except in the presence of a pair of internasal shields."

Oreocalamus hanitschi.

"Snout pointed. Rostral as deep as broad, the portion visible from above measuring half its distance from the frontal; internasals half as long as the præfrontals; frontal hexagonal, once and a half as long as broad, longer than its distance from the end of the snout, shorter than the parietals; nostril close to the rostral, between a nasal and the first labial (the suture between the two shields has disappeared on the left side of the type specimen); loreal longer than deep, its lower border forming an angle wedged in between the second and third labials; one præ-and one postocular; temporals 1+2; eight upper labials, fourth and fifth entering the eye, seventh largest; first lower labial in contact with its fellow behind the symphysial; four lower labials in contact with the anterior chin-shields; posterior chin-shields shorter, in contact with each other. Scales smooth, in 17 rows. Ventrals 127; anal entire; subcaudals 26 pairs. Blackish brown above and on the outer ends of the ventral shields; belly yellowish white, with a few scattered brown dots; tail brown beneath, with a darker median streak."

"Total length 375 millim.; tail 50."

"A single male specimen from Kina Balu, 4,200 feet."

AMPHIBIANS.

Of these we obtained fifteen different species, one of which proved new to science. Unlike the Reptiles, we obtained of most species of this group numerous specimens, until on Kina Balu we had to refuse the more common species which the men brought in. We also noticed on our march how the various species of Batrachians replaced each other as we went along. At Panjut, nearest the coast, we obtained only *Rana erythræa*, which was followed by *Rhacophorus leucomystax* at the Tuaran River, by *Rana kuhlii* on Gunong Kappa and Gunong Kalawat, by *Megalophrys nasuta* at Koung, Kiou and the Kadamaian River, Kina Balu, 2,100′. Finally *Bufo leptopus*, *B. penangensis* and especially *Rana whiteheadi* were dominant on Kina Balu. Of the latter species enormous numbers were brought in. The single specimen of *Ichthyophis glutinosus* was found lying near the bank of the Menternan River, after a heavy thunderstorm, with a great deal of sand sticking to its slimy surface.

Very interesting were the tadpoles of *Rana cavitympanum*, with their huge ventral suckers, which my men found attached to the boulders in the most foaming parts of the Inuman River where the current was so strong that we could keep our feet only with the greatest difficulty. T. Mocquard (7) in an appendix to Whitehead's 'Exploration of Kina Balu,' pp. 285-286, discusses these adhesive disks and considers the tadpoles to be parasitic. If, however, he had had the opportunity of seeing these creatures alive in their natural surroundings, he would have had no difficulty in discovering the true function of those suckers, which can only be to enable their owners to hold on to a firm object in the midst of the raging torrent in which their existence commences.

The Amphibians obtained are :

Rana cavitympanum (tadpoles). Inuman River.
———— *erythræa.* Panjut.
———— *kuhlii.* Gunong Kappa and G. Kalawat.
———— *luctuosa.* Koung.
———— *whiteheadi.* Kina Balu, 2,100′ and 4,200′.
Rhacophorus acutirostris. Kina Balu, 4,200′.
———— *leucomystax.* Tuaran River.

Ixalus natator. Kina Balu, 4,200′.
Oreobatrachus baluensis. Kina Balu, 2,100′.
Bufo leptopus. Kina Balu, 2,100′ and 4,200′.
——— *penangensis.* Kina Balu, 2,100′ and 4,200′.
Leptobrachium baluense, n. sp. Kina Balu, 4,200′.
——— *hasseltii.* Gunong Kappa.
Megalophrys nasuta. Koung, Kiou and Kina Balu, 2,100′.
Ichthyophis glutinosus. Menternan River, near Bungol.

Eight specimens were obtained of the new form *Leptobrachium baluense* and Mr. Boulenger, (3), pp. 453-454, gives the following description of the one specimen submitted to him :

Leptobrachium baluense.

" Tongue pyriform, entire. Vomerine teeth in two small widely separated groups behind the line of the choanæ. Head much depressed, nearly twice as broad as long, semicircular in outline ; skin adherent to the rugose skull ; snout shorter than the diameter of the orbit, not projecting beyond the mouth ; canthus rostralis angular ; loreal region vertical, concave ; interorbital region nearly twice as broad as the upper eyelid ; tympanum feebly distinct, three-fifths the diameter of the eye. Fingers rather elongate, slender, first extending a little beyond second. Foot much longer than the head ; toes moderately long, slender, with a very short web at the base ; no subarticular or metatarsal tubercles. The tibio-tarsal articulation reaches the shoulder. Skin perfectly smooth ; a very small tubercle near the border of the upper eyelid, above the pupil. Back and upper surface of snout dark grey ; posterior half of upper surface and sides of head blackish brown ; a curved light streak, the concavity turned forwards, across the upper eyelids and the interorbital region, followed by a Y-shaped blackish marking ; two light spots on the upper lip, below the eye ; large blackish-brown partly confluent spots on the back ; sides dark brown, light-edged above ; limbs dark brown, with rather indistinct darker cross-bars ; throat brown, belly brownish white."

" From snout to vent 65 millim."

" A female specimen, full of ripe eggs, 3 millim. in diameter, from Mount Kina Balu, 4,200 feet."

"Nearest allied to *L. Feæ*, Blgr. Distinguished by the smaller head, the distinct tympanum, the longer digits, and the absence of a large horn-like tubercle on the upper eyelid."

FISHES.

Only two freshwater fishes were obtained during the expedition, both from the Kadamaian River, Kina Balu, 2,150′, viz: one specimen of the remarkable *Gastromyzon borneensis* (=*Lepidoglanis monticola*) with its flat sucker-like ventral surface, enabling the animal to live in the mountain torrents, like the tadpoles of *Rana cavitympanum* mentioned above; and many specimens of a new homalopteroid fish, named by Mr. Boulenger (2) *Glaniopsis hanitschi*, n. g. and n. sp. He gives the following description of this fish:

Glaniopsis, gen. nov.

"Head and anterior part of body depressed; snout scarcely projecting beyond the mouth, which is moderately large; five pairs of barbels—two in front of the snout, two at the angle of mouth, and one between the two nasal openings; gill-openings narrow. Body covered with small scales, head naked; lateral line present. Dorsal fin short, further back than base of ventrals; anal short; pectoral and ventral fins horizontal, many-rayed, the outer rays simple."

"Well distinguished from *Homaloptera* by the presence of a nasal barbel."

Glaniopsis hanitschi.

"Depth of body 6½ times in total length, length of head 5 to 5½ times. Head scarcely longer than broad; snout rounded; eye in the middle of the length of the head, its diameter 5 times in length of head, 2½ in interorbital width; barbels subequal in length, twice as long as diameter of eye. Dorsal 8, commencing a little behind base of ventrals, situated at equal distance from the end of the snout and the end of the caudal. Anal 7. Pectoral as long as head, terminating at a considerable distance from the ventral. Caudal as long as head, scarcely emarginate. Caudal peduncle as long as deep. Scales extremely small, smooth; lat. l. 120-125. Yellowish brown above, with transverse dark brown spots or interrupted cross-bands; head dark olive-brown above; lower parts whitish; dorsal and caudal greyish, the latter blackish at the base; pectorals greyish olive above, white beneath; ventrals and anal white; a black spot at base of ventral."

"Total length 93 millim."

"A female contains ripe ova of large size, 2 millim. in diameter."

MOLLUSCA.

The following land and fresh-water mollusca, as identified by Mr. EDGAR SMITH, British Museum, were obtained during expedition:

Helicarion whiteheadi, Godwin-Austen. Kina Balu, 4,200′.
Macrochlamys subconsul, Edgar Smith. Gantian and Kina Balu, 2,150′ and 4,200′.
Macrochlamys sp., Kina Balu, 4,200′.
Rhyssota brookei, Adams and Reeve. Kappa.
Hemiplecta densa, Adams and Reeve. Kina Balu, 2,150′ and 4,200′.
Hemiplecta sp., Kiou.
Trochonanina kinabaluensis, Edgar Smith. Kina Balu, 2,150′ and 4,200′.
Chloritis tomentosa, Pfeiffer. Kiou. Kina Balu, 2,150′.
Amphidromus adamsi, Reeve. Kina Balu, 2,150′.
Leptopoma sericatum, Pfeiffer. Kina Balu, 2,150′ and 4,200′
——— *undatum*, Metcalfe. Kina Balu, 4,200′.
Microparmarion simrothi, Collinge and Godwin Austen Kina Balu, 2,050′.
Pterocyclos tenuilabiatus, Metcalfe. Kina Balu, 2,150′.
Cyclotus trusanensis, Godwin Austen. Kina Balu, 4,200′.
Dyakia n. sp.? Kina Balu, 4,200′.
Lagochilus kinabaluensis, Edgar Smith. Kina Balu, 4,200′.
Pythia scarabæus, L. Gantian.
Melania episcopalis, Lea. Menternan River.

INSECTS.

All the Insects I obtained, with the exception of the Lepidoptera, were sent to Dr. Sharp who kindly identified all the known species. The collection, however, contains, especially amongst the Orthoptera, quite a number of species which, according to Dr. Sharp, are probably new, and their identification is unavoidably left for some future occasion.

Some of the most remarkable Insects on Kina Balu, 4200′, were certain forms which Dr. Sharp considers to be coleopterous larvæ, probably of *Lycides*. They were constantly brought in by my men in handsful, and I collected them myself on the ground, on rotten pieces of wood, and on low shrubs. These larvæ resemble in many points certain larvæ which I collected on Bukit Timah, Singapore, and on Maxwell's Hill, Perak, and which, according to Dr. Sharp, belong to another species of *Lycides*. It is apparently this form from the Malay Peninsula which is figured by C. J. Gahan, NATURAL SCIENCE, Vol. VII (1898), p. 43, in an article on the carboniferous *Dipeltis*. Since, however, Gahan's figure is not accompanied by a description and since, as far as I know, the larva from the Malay Peninsula has never been described, I have thought it advisable to give the following description of it.

The animal is remarkably flat and leaf-like, only a few parts of its body exceeding 1 mm. in thickness, the greatly expanded lateral portions of the thorax being even thinner. The head is very small, 1·5 mm. across, and can be retracted within the cavity of the prothorax, and is always so in dead specimens. Eyes very small, black. Both maxillary and labial palps are cone-like structures, with four and three joints respectively, the basal joint in each being very much broader than the distal joint. Mandibles small. The antennæ are very short club-shaped bodies, about 0·68 mm. in length and 0·5 mm. in greatest thickness. There is a chitinous ring round the narrow base, distally followed by a crown-like chitinous structure, consisting of a broad ring from which four lobes arise lying close round the 'club.' In the living specimen, the antennæ often appear as if they themselves were retractile, but as at the slightest disturbance the entire head is withdrawn inside the tubular cavity of the prothorax, and the antennæ are so very minute, nothing definite could be ascertained. The prothorax is somewhat triangular, about twice as broad as long; both mesothorax and metathorax are nearly three times as broad as long, and the posterior border of the metathorax is deeply concave. Of the abdomen, nine segments are visible externally, and its length is only about that of prothorax and mesothorax together. The width of the first segment is two-fifths that of the metathorax, that of the last segment one-fifth. The prothorax bears dorsally two tubercles, about equidistant from the middle line and the side, and slightly nearer the posterior than the anterior margin. The mesothorax bears two pairs of tubercles, an anterior and a posterior, the posterior pair being situated near the centre of each half of the segment, and the anterior pair at equal distance from the posterior pair and the anterior margin of the segment, and nearer the middle line; the metathorax also has two pairs of tubercles, placed like those of the mesothorax. The first eight abdominal segments bear three pairs of spines each, viz. one pair of lateral ones (shown in Gahan's figure), and two pairs of ventral ones; the last segment has lateral spines only.

Colour: the thoracic tubercles are black, and the tips of the ventral spines are yellowish. The rest of the body is uniformly deep chestnut brown.

Size: length of the largest Singapore specimen 41 mm.; of the largest Perak specimen 49 mm.; greatest width (metathorax): 21 mm. in both cases.

Hab: mountainous jungle of Singapore and Malay Peninsula. Rare.

The Kina Balu larva differs from this one (1) in the proportions of its dimensions, the thorax being narrower, and the abdomen longer and broader; (2) in the position of the thoracic tubercles, which are always placed in one row and close to the posterior margin of the segments; (3) in the presence of abdominal tubercles, viz., two in each of the first eight abdominal segments, also placed close to the posterior margin of the segments; (4) in the structure of the antennæ, which, although of the same size and shape, and having also a narrow chitinous ring round their base, have the crown-like chitinous structure at their distal end divided, not into four, but into 12 narrow finger-like lobes; (5) its colour, being of a lighter chestnut brown, with an orange line along the sides of the thorax, the tubercles and feet also being orange. The number of thoracic tubercles and abdominal spines is, however, the same in the two species.

No luminosity was observed in either species, although I had the one from the Malay Peninsula alive for several weeks, and was able to watch the Kina Balu one for several nights, as much of the material brought in had to be rejected and the larvæ were crawling about near our camp.

A tabular statement of the chief points of difference may be useful:

	Malay Peninsula form.		*Kina Balu form.*
Length:			
total	49 mm. (P)	41 mm. (S)	52 mm.
thorax	27	25	26·5
abdomen	22	16	25·5
Width:			
metathorax	20·5	21	18
abdomen	10	9	12
Tubercles:			
prothorax	two near centre		two near post. edge.
mesothorax	four do.		four do.
metathorax	four do.		four do.
abdomen	none		two in first 8 segments.
Antennæ:			
chitinous crown	four lobes		twelve lobes
Colour:			
general	dark chestnut		light chestnut.
edge of thorax	do.		orange
tubercles	black		do.
feet	dark chestnut		do.
spines	do.		do.
Occurrence:	rare		common (4200', March 1899).

NOTE: 'P' and 'S' refers to the largest specimens obtained in Perak and Singapore respectively.

On Kina Balu, 4200', I also found two specimens of another form which bore some superficial resemblance to the larvæ described above, but which I now consider to be adult females of some beetle, as they are luminous. Dr. Sharp (Cambridge Natural History, Vol. VI, p. 251) refers to a paper by Haase (Deutsche Ent. Zeitschrift, Vol. XXXII, 1888, pp. 145-167) where an extraordinary light-giving larva-like adult female beetle from South America is described (*Phengodes hieronymi*). The Kina Balu form has, however, except for its luminosity and absence of wings, little resemblance to the S. American form, and rather recalls an *Oniscus* in its oval shape and uniform segments, although its body is more elongate. Its head is small and black. Mouth appendages normal; mandibles long, thin, curved, and crossing each other in repose. Antennæ with four joints each: length of first joint, 2 mm., of second 1 mm., of third 4 mm., of fourth 1 mm; first and second joints and proximal half of third joint white, distal half of third joint black, fourth joint yellow and covered with setæ. Eyes small (0·5 mm. diameter), placed behind the base of the antennæ. The body is much depressed, with little difference between the segments of the thorax and abdomen. The larger of the two specimens captured is 60 mm. in length (prothorax 12, mesothorax 7, metathorax 6, abdomen 33 mm.), 18 mm. in greatest width (metathorax), 7 mm. in greatest thickness. The terga are slightly arched and entirely smooth; colour black, with a narrow white marginal border on the prothorax which is continued and widens posteriorly until, in the eighth abdominal segment, only a small black patch is left in the centre of its posterior margin. The last segment is small, 4 mm. across, and entirely black. The legs are black, with the exception of the tibiæ; the first seven and the ninth sternum, the chitinous patches around the thoracic (prothorax and mesothorax) spiracles and those around the first seven abdominal ones are also black; the rest is white, viz., the eighth sternum, except for a black cross, the membranous portions between the sterna, the tibiæ, and especially also the circular area around the eighth abdominal spiracle. In this oval white patch, measuring 3·5 by 2 mm., the luminous organ is situated, and the light given off by it is of an extraordinary brilliancy. I had one of these larvæ alive for nearly a week, and enclosed in a glass-tube, it served me as a night light during the long sleepless nights on Kina Balu.

Dr. Sharp to whom I submitted this species for identification, marked it 'Larva of *Lampyrides*, unknown,' but on account of its luminosity I venture to regard it as an adult female, similar to the S. American form mentioned above. The absence of sufficient. material for dissection, however, makes a final decision impossible

The following is a list of the Orthoptera, Coleoptera and Rhynchota as identified by Dr. Sharp.

ORTHOPTERA.

Discotettix belzebuth, Kina Balu, 2,100′.
Marmessoidea n. sp. Bungol.
Clitarchus n. sp. (No. 1) Kina Balu, 2,100′.
Clitarchus n. sp. (No. 2) Kiou, 2,400′.
Hierodula birivia, var. *minor*, Koung.
Deroplatys exsiccata, Kiou.
Tenodera aridifolia, B. N. B.
Panesthia sp. (near *P. javana*), Kina Balu, 4,200′.

COLEOPTERA.

LAMELLICORNIA :

Aceraius sp. (near *A. borneanus*). Kina Balu, 4,200′.
——— sp. (near *A. grandis*). B. N. B.
——— n. sp.? Kina Balu, 4,200′.
Catharsius molossus, ♀. Kappa.
Chalcotheca auripes. Kina Balu, 2,100′.
——— *spathulifera*, ♀. Kiou, 2,400′.
——— sp. (called *C. pomacea* by Heyne). Kina Balu, 2,100′.
Lachnosterna sp. Kina Balu, 4,200′.
Leucopholis sp. Kiou, 2,400′.
Milon sp. ♀. Kina Balu, 2,000′.
Odontolabis brookeanus. ♂ ♀. Kiou, 2,400′.
Trichogomphus milon (?) ♂. Bungol.
——— sp. B. N. B.
Westwoodia sp. (near *W. howitti*). Kiou, 2,400′.
——— sp. Kina Balu, 2,000′.
Xylotrupes gideon, var. ♀. Kiou, 2,400′.

CURCULIONIDÆ :

Cyrtotrachelus sp. Kiou, 2,400′.
Macrocheirus sp. Kiou, 2,400′.
Protocerus colossus. Koung.
Rhynchophorus sp. Kiou, 2,400′.

BRENTHIDÆ :

Eutrachelus temmincki ♂ ♀. Kiou, 2,400′.

LONGICORNIA :

Apriona flavescens. Kiou, 2,400′.
Batocera titana var. Koung.
Epepseotes luscus. Kiou, 2,400′.
Palimnia tessellata. Kiou, 2,400′.
Thysia wallichii. Kiou, 2,400′; Kina Balu, 2,000′.

PHYTOPHAGA :

Anisodera sheppardi. Kiou, 2,400′.
Aplosonyx sp. Kina Balu, 2,100′.

EROTYLIDÆ :

Triplatoma macleayi var. Kina Balu, 4,200′.

ENDOMYCHIDÆ :

Eumorphus quadrinotatus. Kina Balu, 2,100′.

RHYNCHOTA.

Tacuna speciosa. Kiou, 2,400′, and Kina Balu, 4,150′.
Cryptotympana aquila. Kiou, 2,400′, and Kina Balu, 2,150′
Dundubia rugivena. B. N. B.
Cosmosearta viridans. Kina Balu, 2,100′.
Pycanum pretiosum. Kiou, 2,400′.
Tessaratoma malaya. Kiou, 2,400′.
Eusthenes robustus. Kina Balu, 2,000′.
Prionolomia heros. Kina Balu, 4,200′.
Laccotrephes ruber (?). B. N. B.
Flata (Pœciloptera) circulata (?). Kiou.

LEPIDOPTERA.

The specimens collected during the expedition were identified by Messrs. L. DE NICEVILLE and R. SHELFORD :—

Hestia lynceus, Drury. Kiou.
Ideopsis daos, Boisd. ♂ Kina Balu, 2,000′.
Danais intensa, Moore. ♀ Kina Balu, 2,000′.
——— *crowleyi*, Jenner Weir. ♂ Kina Balu, 4,150′.
——— *aspasia*, Fabr. Kina Balu, 2,000′.
——— *septentrionis*, Butl. Kina Balu, 2,000′.
Mycalesis orseis, Hew. Kina Balu, 2,000′.

———— *polydecta*, Cram. Kina Balu, 2,000′.
———— *janardana*, Moore. Kiou.
———— *pitana*, Staud. Kiou.
Ypthima pandocus, Moore. Kina Balu, 2,000′.
———— var. *corticaria*. Kiou; Kina Balu, 2,000′.
Amnosia baluana, Fruhstorfer. Kina Balu, 2,000′.
Thaumantis odana, Godt. ♂ Kiou.
Tenaris occulta, Grose Smith. Kiou.
Clerome besa, Hew. Kiou.
———— *kirata*, De Nicéville. Kiou.
Xanthotænia busiris, Westw. Kina Balu.
Vanessa perakana, Distant. Kiou.
Symbrenthia hippoclus, Cram. ♂ Kiou; Kina Balu, 2,000′.
————*hypselis*, var. *balunda*, Staud. Kina Balu, 2,000′.
Euthalia ambalika, Moore. Kiou.
Chersonesia rahria, Moore. Kiou.
Neptis leucothoe, Cram. Kiou.
Athyma kresna, Moore. Kiou.
Cethosia hypsea, Doub. and Hew. ♂ Kina Balu, 2000′.
Cynthia deione, Erichson. Kina Balu, 2,000′.
Manto martina, Hew. Kiou.
Sinthusa amata, Dist. Kiou.
Sithon kiana, Grose Smith. Kina Balu, 2,000′.
Rapala sphinx, Fabr. Kiou.
Leptosia xiphia, Fabr. Kina Balu, 2,300′.
Delias parthenia, Staud. Kiou.
————*eumolpe*, Grose SmithKiou.
Terias hecabe, L. Kina Balu, 2,000′. Kiou.
Huphina(=Appias) hespera, Butl. Kina Balu, 2,000′.
Ornithoptera andromache, Staud. Kiou.
————*brookeana*, Wallace. ♂ Kina Balu, 2,150′.
————*ruficollis*, Butler. ♂ Kiou.
Papilio procles, Grose Smith. Kina Balu, 2,000′.
———— *stratiotes*, Grose Smith. Kina Balu, 2000′.
———— *sclateri hewitsonii*, Westwood. Kina Balu, 2,000′.
———— *memnon*, L. (m.) Kiou.
———— *helenus*, var. *palawanicus*, Staud. Kiou; Kina Balu, 2,000.′
———— *delesserti*, Guerin. Kiou.

Hasora mus, Elwes. Kina Balu, 4,150′.
Telicota bambusæ, Moore. Kiou.
Odontoptilum pygela, Hew. Kina Balu, 2,000′.

MYRIAPODA AND ARACHNIDA.

Some of the specimens obtained in these groups were identified by Dr. Sharp as follows :

CHILOPODA :
  Scolopendra sexspinosa. Kina Balu, 2,150′.
DIPLOPODA :
  Spirotreptus baluensis. B. N. B.
  Zephronia sp. (near *Z. everetti*). Kina Balu, 4,200′.
  Stenoniodes baluensis. Kina Balu, 2,150′.
SCORPIONINA :
  Chærilus lævimanus. Kina Balu, 4,150′.
PEDIPALPI :
  Thelyphonus sp. (near *T. klugi*). Kina Balu, 4,150′.
PHALANGINA :
  Sagvella sp. Kina Balu, 2,100′.
ARANEINA :
  Gasteracantha vittula. B. N. B.
  ——— *fornicata.* Kiou, 2.400′.
  Hevennia ornatissima. Kiou, 2,400′.

FRESHWATER CRURSTACEA.

One species of prawn and three species of crabs were obtained. One crab, *Potamon consobrinum*, was common in the Kadamaian River a few yards from our camp on Kina Balu, 2,100′, where it lived in the crevices of the rock just below the water. The men caught them by holding bait at the mouth of these crevices. The following list gives the species and the number of specimens collected :

Palæmon pilimanus de Man.	1	specimen.
Potamon convexum (de Man),	2	,,
Potamon consobrinum de Man,	26	,,
Potamon kadamaianum n. sp.,	1	,,

Mr. Borradaile to whom one or more specimens of each species were submitted, reports as follows :—“ Each of the three known species is already recorded from Borneo ; and the new one is allied to a form found in the island by the Dutch Central Borneo expedition."

Suborder MACRURA
Tribe CARIDEA.
Family PALÆMONIDÆ.
Genus PALÆMON.

1. "PALÆMON (MACROBRACHIUM) PILIMANUS de Man.

Palæmon pilimanus, de Man, Notes Leyd. Mus. i. p. 181 (1879); Veth's 'Midden Sumatra,' Crust. p. 4, pl. ii. fig. 2 (1882).

Palæmon (*Macrobrachium*) *pilimanus*, Ortmann, Zool. Jahrb. x. Syst. p. 735, pl. xlvii. fig 9 (1891); de Man, Notes Leyd. Mus. xx. p. 158 (1898).

The single specimen, which is from the Innuman River, between Kalawat and Bungol, British North Borneo, differs from Ortmann's figure in having the submedian spines of the telson considerably shorter; it is very possible, however, that the ends of these have been worn or broken off."

Suborder BRACHYURA.
Tribe CYCLOMETOPA.
Family POTAMONIDÆ.
Genus POTAMON.

2. "POTAMON (PARATHELPHUSA) CONVEXUM (de Man).

Paratelphusa convexa de Haan, de Man, Notes Leyd. Mus. i. p. 63 (1879); Max Weber's 'Reise Ned. O. Ind.' ii. p. 302 (1892).

Potamon (*Parathelphusa*) *convexa*, de Man, Notes Leyd. Mus. xxi. p. 142 (1899).

The single specimen seems, by the following characters, to belong to this species.

i. There are two epibranchial teeth on each side.
ii. There is a spine near the end of the merus in the walking legs.
iii. The distance between the tip of the postorbital tooth and that of the first epibranchial tooth does not exceed the distance between the first and second epibranchial teeth.
iv. The outer edge of the first epibranchial tooth is strongly convex.
v. There are no spots on the carapace or limbs.

The dactyles of the walking-legs are rather shorter and stouter than is indicated in de Man's figure of the allied *P. maculata.* The fingers of the chelæ are dark in colour. *P. convexa* is already recorded from Java, Timor, and New Guinea, and doubtfully from Borneo[1]. *P. maculata* (de Man) 1879 is a closely allied form from Sumatra.

1 ♀ British North Borneo."

3. "POTAMON (THELPHUSA)[2] CONSOBRINUM, de Man.

Potamon (*Potamon*) *consobrinum*, de Man, Notes Leyd. Mus. xxi. p. 99, pls. vi., ix., x. fig. 10 (1899).

This species is already reported from Borneo (Mt. Damoes and Upper Sibau River) by de Man. Ortmann (Zool. Jahrb. x. Syst. p. 301) gives a list of allied forms and their distribution.

2 ♂, 1 ♀ ; Kadamaian River, Kina Balu, 2,100 feet."

4. "POTAMON (GEOTHELPHUSA) KADAMAIANUM, n. sp.

A single female specimen of a form allied to *P. obtusipes* (Stimps.) 1858, and *P. dehaani* (Gray) 1847, seems to deserve a name of its own. Whether it were not better treated as a local race of one of the above species, or all three as local forms of *P. dehaani*, is a question to be settled when the subject of the interrelationship of the various forms in the genus comes up for discussion. In the meantime its distinctness seems quite as great as that of several of the generally accepted species. It differs from *P. obtusipes* in the greater slenderness of its legs, especially of the dactyles, which are long and narrow and end in a sharp claw.* A *Potamon* of the subgenus *Geothelphusa* with the surface of the carapace smooth and finely pitted over the greater part of its extent, finely granular on the front, more coarsely so on the forepart of the branchial region, rugose on the hinder part of the same region; the front much deflexed, ending below the outer angles of the orbits, when viewed in front bounded by an almost straight line curving away gradually towards the outer angles;

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[1] Miers, Ann. Mag. Nat. (5) v. p. 306 (1880).

[2] According to Ortman (Zool. Jahrb. x. Syst. 300) *Thelphusa* is the correct name for the subgenus in which this species must be placed.

* The portion defined by asterisks was by Mr. Borradaile's wish substituted for the original passage in the P. Z. S.

the median furrow of the carapace continued over the front to its anterior edge, behind each orbit a shallow triangular depression of the carapace reaching backwards through rather less than half the length of the cephalothorax and separating the branchial from the gastric region; the chelipeds subequal, similar, when fully extended outwards reaching the end of the carpopodite of the second walking-leg, the wrist and palm rugose tuberculate, the fingers rather shorter than the greatest length of the palm, the immoveable finger with two ridges along the outside, the moveable with one, the wrist with a sharp point at the outer end, and a strong tooth on the inside; the second walking leg rather longer than the third, the latter longer than the first and fourth which are approximately equal, the upper edges of the meropodites of all the legs rugose, the propodites of the walking legs somewhat longer than the carpopodites, the dactyles about equal to the propodites, sword-like, ending in a sharp claw, and provided above and below with spines. * The length of the cephalothorax is 15 mm. The colour in spirit is a dark brown.

P. dehaani has been found in Japan and the Loo Choo Islands; *P. obtusipes* in the Loo Choo Islands and the Philippines.

P. bicristatum de Man, 1899, is an allied species from Borneo (Mount Liang Koeboeng). In view of the peculiarities of the distribution of the genus, it seems best to choose a territorial name for the new species. That of *kadamaianum* is therefore proposed, derived from the name of the river in which the present specimen was found.

1 ♀; Kadamaian River, Kina Balu, 2100 feet."

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4. *Burbidge, F. W.*, The Gardens of the Sun, or 'A Natura-

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8. *St. John, Spenser*, Life in the Forests of the Far East: or Travels in Northern Borneo. 2 Vols. London, 1863.

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10. *Whitehead, John*, Exploration of Mount Kina Balu, North Borneo. London, 1893.

Explanation of the Plates.

N. B. Plates I and II illustrate the animals first described by Mr. Boulenger in the '*Annals and Magazine of Natural History.*' They are, however, now figured for the first time.

PLATE I.

Fig. 1. *Gecko rhacophorus*, Boulenger (p. 70.)
,, 2. *Stoliczkaia borneensis*, Boulenger (p. 71.) Dorsal, ventral and lateral views.
,, 3. *Oreocalamus hanitschi*, Boulenger (p. 72.) Dorsal, ventral and lateral views.

PLATE II.

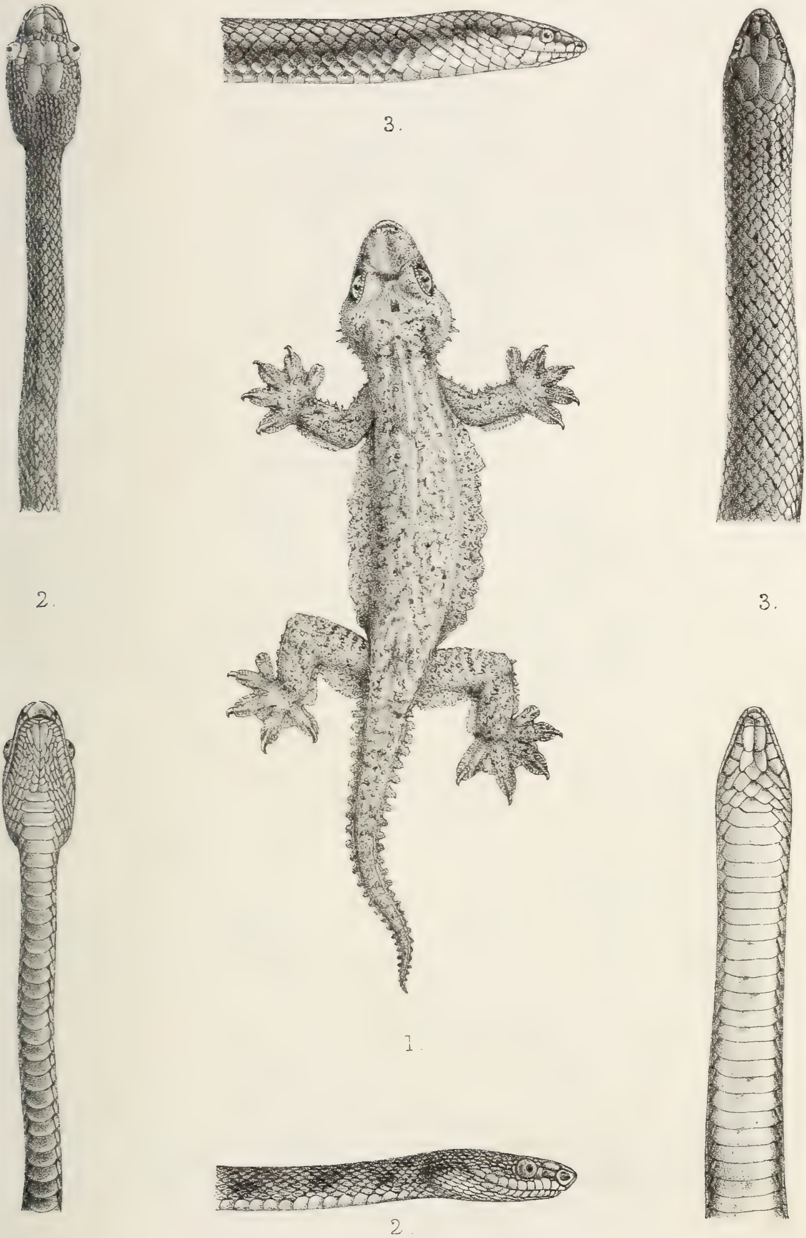
Fig. 1. *Leptobrachium baluense*, Boulenger (p. 74.)
,, 1a. ,, ,, ,, ,, Mouth.
,, 2. *Glaniopsis hanitschi*, Boulenger (p. 75.)
,, 2a. ,, ,, ,, ,, Ventral view.

PLATE III.

Kadamaian River, Kina Balu, 2000′, Looking up. March 27th 1899.

PLATE IV.

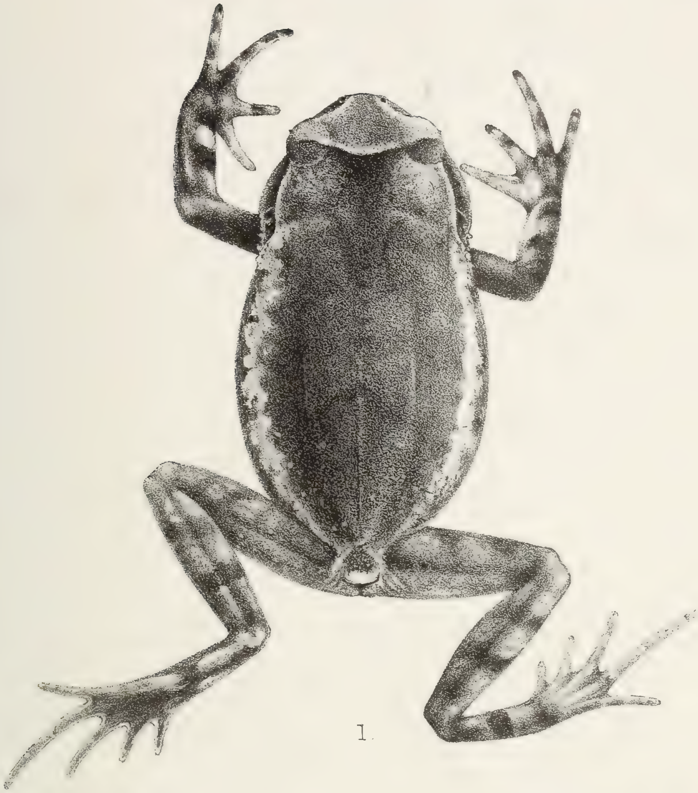
Kadamaian River, Kina Balu, 2000′, Looking down. Mar. 27th 1899. Taken from the same spot as Plate III.



J. Green del. et lith.
Mintern Bros. imp.

1. Gecko rhacophorus. 2. Stoliczkaia borneensis.
3. Oreocalamus hanitschi.

Straits Branch. R. As. Soc. J. XXXIV. Pl. II.



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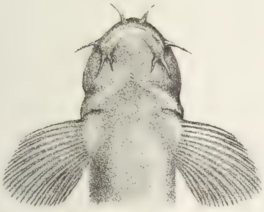
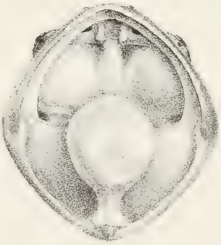
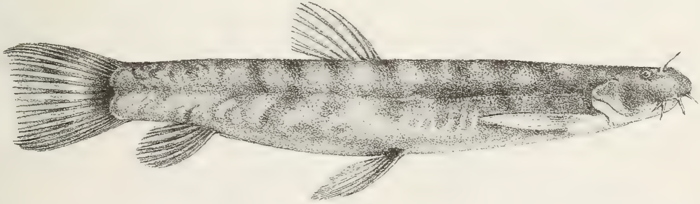


2a.



1a.



J. Green del. et lith.

2.

Mintern Bros. imp.

1. Leptobrachium baluense.
2. Glaniopsis hanitschi.

Dammar and Wood Oil.

By H. N. Ridley.

Dammar is the resin exuded from various trees when wounded. The trees producing it belong chiefly to the order *Dipterocarpeæ*, and to the genera *Shorea*, *Hopea* and *Anisoptera*, but the Malays also class as Dammar resins derived from certain species of *Canarium*, and *Triomma* (*Burseraceæ*) and *Calophyllum* (*Guttiferæ*).

The resins are exuded from wounds in the trunk or branches, or sometimes a tree is hollow in the centre, and the space is filled or partly filled with the dammar, which thus forms a cast of the hole. At times it is exuded beneath the bark when it sets in the form of a plate or lamina, or it may drip slowly from a broken or cracked bough, so as to form stalactitic pipe-like masses on the injured part, and sometimes a stalagmitic mass on the ground below. The exudation does not commence immediately the wound is inflicted, and is produced very slowly, at first like turpentine, but soon setting into a hard crystalline mass. Even quite young trees, such as *shoreas*, produce the dammar when the stem or twigs are broken or bored by insects. The masses of dammar are not only modified in form by their method of production but also in colour and transparency. Many of the native and trade names have reference rather to the form and colour of the resin mass than to the tree from which it is derived. Thus Cat's-eye Dammar (*Damar mata kuching*) is a transparent, pale, yellowish resin, usually in small pieces, and can be derived, I believe, from almost any of the Hopeas. *Damar daging*, a dark brown, often handsomely marbled resin, often occurs in large masses showing the form of the hollow of the tree in which it was exuded. A very beautiful dammar of which I obtained a specimen from Johore was a clear sea green. It was found buried in the ground as is often the case, and there was no clue as to what tree produced it. When oxidised the resin becomes opaque and yellowish white, and rather soft and powdery. Most of the dammar found in the ground in the forests is much oxidised outside, but the action goes on very slowly, and ground dammar in good condition can often be found in spots where for many years there has been no forest or dammar trees. Thus one can often find pieces of dammar in the ground on Blakang Mati where dammar trees have long ceased to exist. The greater part of the dammar collected by the Malays is thus found by digging in the ground where *shoreas* or other dammar trees have decayed. No attempt is made to extract it from trees as is the case in wood oil. The resin is used locally for making torches, and also for varnish, but the export trade in Singapore has very much declined of late years. Cat's-eye dammar and copal from Celebes are almost the only dammars now exported from Singapore, there being no demand for the less transparent varieties. The copal which occurs in large beautifully transparent yellow masses is derived from *Shorea selanica Bl.*, and is not to be confused with the African and American Copals, which are derived from species of *Hymenœa* and *Trachylobium* (*Leguinnosœ*).

Varieties of Dammar.

The following is a list of the local names of dammars of the peninsula as far as I have been able to get them.

Damar Seraya Batu; *Damar Seraya.* A hard opaque mass of a dull orange colour, probably derived from *Shorea leprosula* Miq. *Kapong Labu* is also from this tree.

Kapong Jalor. A pipe-shaped mass, brown outside, inside yellow, centre dull olive brown.

Kapong Hantu. Dark brownish colour mixed irregularly with yellow. Both of these are derived from *Shorea macroptera Dyer*, the tree known as Kepong, as perhaps are Kapong Sabut, Kapong S'lawang and Kapong Segan.

Meranti Bunga. An amorphous mass nearly opaque of a whitish olive yellow mixed with greenish brown and weathering yellow.

Meranti Sarang punai; Meranti Tembaga, *Meranti Sama*, *Meranti Ketapa* are probably derived from *Shoreas.*

Meranti Batu, a dark brown weathering orange. This is very similar to the Damar Daging of the Malays, which occurs in large masses in the ground, evidently originally exuded into the hollow of a tree and perhaps taking its brown colour from this method of production.

Damar Mata Kuching. Cat's-eye dammar appears as pale yellow or nearly white, quite transparent, glassy tears. It is the most valued of the local kinds. A number of trees are said to produce this Dammar, among them *Hopea globosa* Brandis, *Hopea intermedia*, King, and *H. micrantha* Hook. f. (Trans. Linn. Soc. XXIII. 160) also *Pachynocarpus Wallichii.*

Damar Rambei Daun. A transparent yellow Dammar, browner in the middle, occurs in a stalactitic form, and is produced by *Shorea acuminata* Dyer.

Damar Chingal is from *Shorea bracteolata*, Dyer.

Merawan Jangkar, *Merawan jalor*, *Merawan Kunyit* are doubtless produced by species of *Hopea.*

Damar Mersawa hitam, by *Anisoptera glabra*, Kurz.
Damar Mersawa putih probably by *A. costata*, Korth.

The seagreen dammar from Johor I have already described. Another unidentified kind I have met with, had been exuded from the stump of a large tree which had been felled in the Carimon islands. It formed an opaque bright yellow mass of the appearance of bee's wax. I was informed that the tree was a Keruing (*Dipterocarpus*), but I could not verify this.

Besides the Dipterocarpus resins, there are some kinds which belong to very different classes of trees, and are roughly classed as Dammars by the Malays. Among these there are several from the genera *Canarium*, *Santiria* and *Triomma*, (*Burseraceæ*). The most interesting is the Kedondong Kijai from *Triomma Malaccensis*, Griff. This resin seems to set with difficulty being more of the consistency of turpentine. It is dark grey or black turning yellowish grey or opaque white with a very pleasant aromatic scent. Other resins obtained from plants of the same order are *Damar Kedondong Krut* (*Santiria* sp.) and *Kedondong Mata hari* from *Trigonochlamys Griffithii* Hook. fil. Sayang from *Santiria laxa*, King. *Damar Kijai* a resin valued by the Malays, is said to be produced by *Canarium secundum* Benn.

Other resins sometimes classed as Dammars by the Malays are those exuded from wounds in various species of *Calophyllum*; *Bintangor bunga* and *Bintangor batu*, (*C. pulcherrimum*) which produces a soft resin very sticky, of a bottle green colour when thin, and black when in mass.

Damar minyak is the name given to the turpentine of the large Conifer *Damara Orientalis*, which grows in the hill ranges of Penang, Perak, etc. This tree abounds in the turpentine, which is very liquid. I have seen it poured out in large quantities from cut roots of a big tree on the Thaiping hills. Cooke states that it was sold to varnish makers under the name of East India Dammar, and that it is much esteemed by natives for incense.

Kelulut Damar. This is a black or more rarely grey Dammar obtained from the nest of the little stingless bees known as *Trigona.* There are several species here which make dammar nests. The commonest appears to be *T. laeviceps*, a small black kind; there is also a light brown kind, and a very small black species which frequently nests under the planks in houses. In the case of *T. laeviceps*, the nest is built in a hollow tree at the entrance to which the bees build a trumpet shaped or flattened tube projecting for six inches or more from the tree. From one nest I obtained a very large cylindrical tube a foot long ending in a flat spoon shaped portion. These tubes are made of a sticky resin, too adhesive for any insect except a Trigona to walk over, so that enemies cannot invade the nest. The nest itself consists of an irregular mass of dammar, in which are placed the detached elliptic cells, in which is often a good deal of black honey. The mass of dammar in old nests is often very large and must represent a vast amount of work on the part of these little bees. Both the dammar and honey are sought by Malays, and used as medicine and the resin also for torches, etc. The tube at the entrance pounded up is rubbed over the body in cases of rheumatism. The presence of a Kelulut's nest in a tree is not necessarily injurious to the tree. Very large nests may occur in trees for many years without causing any appreciable injury. On the other hand it is very probable that they prevent further decay by sealing up the injured wood in dammar, and by preventing termites from effecting a lodgment in the tree. One species of Kelulut makes its nest in that of one of the termites underground usually at the foot of a large tree. There appears to have been some question as to what tree the Kelulut obtained its dammar from, as it has long been noticed (Cook's Gums and Resins) that it was very different from any known kind of resins. The fact is that it is a mixture of all kinds of resins, indeed any resinous substance that the bees can get is collected. They quickly find any wounded resinous tree and gather as much as they can. I have seen them at work at Shoreas *(S. parvifolia) Garcinias*, *Calophyllum*, *Triomma and Angsana (Pterocarpus indicus).*

Wood Oil.

The trees of the genus *Dipterocarpus* do not, like the allied Shoreas, produce dammar but they produce instead, wood oil, or Gurjun oil, as it is commonly called, the Minyak Keruing of the Malays. The *Dipterocarpi* are trees of gigantic size, with large pink or white sweet scented flowers and globose or four or five angled or winged fruits with a pair of long oblong wings as much as nine inches long in *D. grandiflorus* Blanco. The oil is obtained by cutting deep holes into the stem of the tree with an axe or chisel about six inches square, the top of the hole sloping inwards, and the floor excavated to hold the oil. A fire is then made in the hole so as to char the sides and top, after which the oil is exuded in considerable quantities, and collected in kerosine tins. When the oil ceases to flow, it is usual to burn the wound again, when it recommences.

This operation does not necessarily injure the tree to any extent unless it is done to excess, but natives often cut so many holes in a tree that it dies and many trees have been thus killed. As the oil-trees are usually very isolated in the forests and never occur in any great number together a very large extent of forest is required to supply a comparatively small amount of oil, and the supply is now so scanty that the natives seldom go to seek it, and the oil has nearly disappeared out of commerce.

The oil is used for varnish either alone or mixed with other substances, or for caulking boats and such purposes but it is also used to a small extent in medicine under the name of Gurjun balsam, as a substitute for a Copaiba, and it is also stated to be valuable used externally and internally in leprosy. When allowed to stand the oil separates into a clear or dark liquid known as *Chaier* by the Malays and thick semi-solid resin, *Beku.*

The chief trees producing oil here, are, *Dipterocarpus grandflorus*, Blanco. *Minyak Keruing Dadeh ; Minyak Gombang Kechil.*

The oil soon sets into a stiff light brown resin, leaving very little of the liquid *(Chaier)*. It is used for varnish either when fresh before it has time to set or mixed with other more liquid oils.

D. Kerrii, King. *Minyak Keruing Chaier.* The oil is rather thin and watery of a yellow colour, and the resin is yellowish white.

D. Hasselti Bl. *Minyak Keruing Sudi.* The oil is of a deep brown colour, red by transmitted light with a rather stiff brown resin deposit. One of the best oil trees; it is not rare to find fruits of this in which the pericarp contains nothing but a clear transparent oil.

D. crinitus, Dyer. *Minyak Keruing Bulu.* This oil is considered a good kind and used for mixing with the thicker oils. The tree is commonly known as Gombang.

Minyak Pekat, Minyak Merah and Minyak Babi are as yet unidentified.

D. incanus Roxb. and *D. alatus* Roxb. occur in Siam and supply the greater part of the Siamese Wood Oils of commerce. They will probably be found in the north of the peninusula as they are found quite in the south of Siam. Siamese wood oil (probably from *D. alatus*) is very dark in colour nearly black by reflected light but yellow by transmitted light; the resin whitish. The greater part of the Wood Oils of Commerce are now exported from Rangoon, and are derived from the forests of Burmah. The trees producing them are all species of *Dipterocarpus* but all or nearly all distinct from those of the Malay Peninsula. A full account of them is to be found in Watt's Dictionary of the Economic Plants of India.

Notes on the Flying Frog

Rhacophorus nigropalmatus.

By R. Hanitsch, Ph.D.

Mr. A. D. Machado, one of the most constant benefactors to the Raffles Museum, presented last year a specimen of a Flying Frog from Pahang which I have only recently been able to identify as *Rhacophorus nigropalmatus*. As only two specimens of this species have so far been recorded, the one obtained by Dr. Charles Hose from the Akan River, Borneo (see G. A. Boulenger, A. M. N. H. (6), XVI, p. 170), and the other obtained by Mr. L. Wray in the Piah Valley, Upper Perak (see S. S. Flower, P. Z. S., 1899, p. 899), this third specimen appears to deserve a special note.

Mr. Machado writes: "I caught this specimen in an old prospecting pit one morning (January 1899) at Kuala Merbao in Ulu Pahang. He had evidently fallen into it and could not get out. I found him swimming about in the water. The pit was about twelve feet deep."

The specimen shows in external characters no difference from those described by Boulenger and Flower, except slightly as regards its cutaneous fringes and coloration. The fringes of the arm seem to be more developed than in either of the other two specimens: there is one not only along the outer edge of the fore-arm continued right to the tip of the fifth finger, but also a smaller triangular one along the inner side, beginning at the proximal end of the upper arm and ending at the distal end of the fore-arm, being widest at the elbow joint. There is a semilunar flap on the tibio-tarsal articulation, as in the other specimens, and, after a break, a narrow fringe along the outer side of the tarsus to the tip of the fifth toe. A very much smaller fringe runs along the first toe. A flap of skin above the cloaca is scarcely noticeable.

When alive, the colour was a bright green above, but now, in spirit, a dark slate-grey with a purplish hue, with numerous minute white dots, isolated or in groups. There are five very conspicuous white spots on the upper surface of the thigh, one of them close to its origin, the other four a little lower down, arranged in a square. The flanks are whitish, veined with black, as in the Bornean specimen, the lower surface is a yellowish white. The enormous interdigital membranes are black near their base, but yellowish towards the edges, with yellow rays going into the black portion.

The specimen is male, its testes being very large, 15 mm. in length. The Bornean specimen was female, whilst there is no record of the sex of the Perak specimen.

Its length from snout to vent is 84 mm., against 80 mm. in the case of the Bornean and 98 mm. in the Perak specimen.

The Flying Frog of which Wallace (Malay Archipelago. 10th edition, p.30) gives such a graphic description, is *Rhacophorus pardalis* and occurs in Borneo and the Philippines, whilst a third Malayan species, *Rh. reinwardtii*, occurs in Java and Sumatra. Very similar species are found in Malabar (*Rh. malabarisus*), the Eastern Himalayan region (*Rh. bimaculatus*) and Madagascar (*Rh. madagascariensis*).

Some New Eastern Gingers.

The following new species of *Scitamineæ* have passed through my hands since writing the paper published in Journal No. 32 and do not appear to be described in Schumann's paper.

Alpinia pectinata n. sp. Plant 4 to 7 feet tall. Leaves oblong lanceolate glabrous thinly coriaceous, blade 20 inches long 4 inches wide with a thick keel, ocrea obtuse. Panicle pendulous secund, with a long thick peduncle, dense with short crowded branches. Bracts many obconic half an inch long papery brown. Flowers pedicelled, pedicels in fruit: ½ inch long. Capsule globose trilocular ½ inch long. Seeds very numerous.

Celebes at Gunong Klabat 1300 to 1600 metres elevation, fruiting in January.

A remarkable plant in its one sided panicle with very short branches bearing heads crowded together, about 100 in a panicle.

The bracts which are ribbed and pubescent, resemble those of *Alpinia involucrata* on a small scale. The specimens are all in fruit. There are two undescribed species belonging to this section in Schumann's paper from Celebes.

A (Hellenia) *Celebica* n. sp. A herb more than 18 inches tall with glabrous very long pointed lanceolate leaves, 8 inches long $1\frac{1}{2}$ inch wide, petiole terete striolate graceful one inch long ochrea oblong truncate. Panicle graceful erect branches short many flowered five inches long. Bracts caducous. Flowers $1\frac{1}{2}$ inch long. Calyx tubular truncate $\frac{1}{2}$ inch long. Corolla tube twice as long, lobes oblong obtuse $\frac{1}{2}$ inch long. Lip narrow shorter than the corolla, deeply bifid, lobes spathulate emarginate. Staminodes narrow subulate. Stamen with a rather long filament, another oblong not crested. Style graceful.

Celebes.

Allied to A *Fraseriana* of Borneo, but remarkable for its very deeply cleft lip.

Amomum terminale n. sp. Stems crowded slender about 2 feet tall, or much taller $\frac{1}{4}$ inch through. Leaves dark green, elliptic lanceolate acuminate thinly coriaceous pale beneath glabrous 7 inches long, 2 inches wide, petiole very short, ocrea $\frac{1}{8}$ inch long rounded. Spike terminal or basal cylindric 4 inches long $\frac{3}{8}$ inch through. Bracts ovate obtuse margins hairy $\frac{3}{4}$ inch long $\frac{1}{2}$ inch wide red. Bracteole $\frac{1}{4}$ inch long oblong obtuse pink. Flowers in pairs. Calyx tubular dilated upwards trifid pink $\frac{3}{4}$ inch long. Corolla tube one inch long slender white, lobes lanceolate acute $\frac{1}{2}$ inch long. Lip three lobed, two lateral lobes shorter curved outwards, acute, median obovate obscurely lobed, $\frac{1}{2}$ inch long. Anther with a broad connective rounded crenulate.

Bismarck Archipelago (Micholitz.) Flowered in the Botanic Gardens, Singapore, Feb. 1900.

The habit of this plant and its red bracts cause it to resemble some species of *Zingiber*, but it has not the long anther beak of that genus. It is abnormal among Amomums in having the spike terminal, but it also is said to produce basal spikes from the rhizome. It is indeed difficult to refer it to any genus but I am unwilling to make a distinct genus for it alone. In some respects it may be classed with an ornamental plant known as *Costus*

Zebrinus of gardens, which however has no relationship with the genus *Costus* at all.

Tapeinocheilus Koordersiana n. sp. A tall plant, 25 feet tall. Leaves broadly oblong nearly four feet long 8 inches wide, subcoriaceous pubescent or glabrous narrowed at the base. Spike subcylindric 8 inches long, 4 inches wide. Bracts stiff coriaceous not woody oblong or ovate cuspidate ribbed pubescent the larger ones 2½ inches long and one inch wide, the inner ones lanceate cuspidate pubescent longer. Bracteoles linear narrowed acute shorter than the flowers. Calyx tube one inch long narrow little enlarged above, lobes lanceolate acute quite covered with silky hairs. Corolla tube hairy but little longer, lobes narrow acute. Lip oblong rounded hairy. Anther oblong hairy. Capsule an inch long obovate warted covered with brown wool.

Celebes.

Another species of this grand Eastern island genus, allied to Miquel's *T. pungens* but with larger flowers and pubescent bracts. I have great pleasure in associating it with the name of Dr. Koorders, who made such fine collections of plants in Celebes recently.

The Birds of the Larut Hills.

Two birds mentioned, but not named, in my paper on the Birds of the Larut Hills have been identified for me by Dr. Hartert.

They are :

Aethopyga temminckii, Temminck's Honeysucker. The second species of scarlet honeysucker mentioned on p. 21.

Notodela leucura. The White-tailed Blue Robin, a female. The "small robin-like brown bird" alluded to at the foot of p. 30.

A. L. Butler.

Botanical Notes.

Malayan Gingers. Dr. K. Schumann has published this year in Engler's Jahrbuch Vol. 27, a monograph of the *Scitamineæ* collected in the various islands of the archipelago, by Beccari, in Sarawak, Sumatra and New Guinea, by the brothers Sarasin in

Celebes, and by Warburg, Hollrung and others in New Guinea. In his arrangement he adheres to the old classification including *Hornstedtia*, *Plagiostachys*, etc., under *Amomum*, and so on. One new genus he describes under the name *Haplochorema* seems to be a true *Koempferia* with creeping rhizomes. It occurs in Borneo, four kinds being described from Sarawak. One might describe it as a Koempferia adapted for jungle life. *Hedychium microchilum* described from Java in my paper in the last Journal, appears as *Brachychilus Horsfieldii* Peters. It was originally described under the name of *Hedychium Horsfieldii* in Hooker's Kew Miscellany, and also by Peters in a Copenhagen Botanical Journal, both works difficult to procure. The whole habit of the plant is so much that of *Hedychium*, that I think it would be better to keep it in that genus. A good figure of what is evidently the common *Costus globosus Bl* is given under the name of *C. acanthocephalus* n. sp. It was collected in West Sumatra by Beccari. The plant is evidently widely distributed. The whole monograph is interesting from a geographical point of view, for though of course one may be sure that many more of these plants will be found in the Eastern islands, it gives sufficiently clear evidence of the change in the flora as we go further east. Thus one notices that the *Globbas*, so abundant here, disappear to a large extent, few occurring in Borneo, fewer in Java, and only one (excluding *G. marantina* probably introduced) further east in the Philippines. *Gastrochilus*, except the cultivated *G. panduratus*, does not occur in the list; but probably this is due to the difficulty of getting the flowers in wild plants. *Zingiber* also disappears rapidly towards the East, but one kind has been met with in New Guinea. *Tapeinocheilus* appears to be abundant in the Papuan region, fourteen species of these grand plants being catalogued, extending from Amboina to New Guinea.

Alpinia rosella Ridl. Since publishing this species (Journal 32. p. 164) I have found a figure and description of a plant collected in British North Borneo by Burbidge and published under the name *Alpinia Fraseriana* Oliver, in the Icones Plantarum vol. vi. pl. 1567, which agrees closely with *A. rosella*, and is I think the same species. I also note some misprints in my description on p. 165, in line 2 *absent* should be *about*, and in line 10 the words should run " Seeds 3 about $\frac{1}{8}$ inch through.

Susu Rimau. In Journal No. 22, on page 340, I gave some account of the curious vegetable product known to the Malays as Susu Rimau, the sclerotium or resting stage of some species of *Polyporus.* I have since obtained other fine specimens of the tuber and the fully developed fungus attached in Singapore and Penang, and Mr. Massee, of Kew, has identified it as *Polyporus sacer*, a very widely distributed fungus.

A Pulau Tiuman Superstition.

I visited the Pahang island of Tiuman in 1898 and stumbled across a superstition which did not impress me very much at the time, though it was recalled to my memory by hearing later of an almost identical belief concerning a hill in upper Siam.

Shortly after going ashore at the island the headman requested me to prevent my Chinese cook bringing any vinegar off the boat; he informed me that if by any chance the vinegar should be spilt, the island would be convulsed and a terrible storm result. On an occasion a few years previously the cook of an European prospector at work on the island had by a similar accident raised such a typhoon that, to quote my informant "the sea was invisible for five days."

This superstition is evidently connected with the widespread belief that no dragon can face vinegar, for it was told me in the village under the peculiar double spur of hill at the extreme south of the island called "Chula Naga" (Dragon's Horns), and it has peculiar application in this instance, though dragons are accredited to several other mountains on the peninsula.

W. C.

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